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M E M O R A N D U M

TO: Susan Sylvester, Chief, Water Control Operations Bureau

FROM: SFWMD Staff Environmental Advisory Team

DATE: January 28, 2014

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Discharge from Lake Kissimmee averaged 297 cubic feet per second (cfs) at S-65 over the week. Lake Okeechobee stage is 13.79 feet NGVD for the period ending at midnight on January 27, 2014. The Lake stage showed a net decrease of 0.12 feet over the past seven days. It is now 0.43 feet lower than it was a month ago and 0.92 feet lower than it was a year ago. The current stage is 0.90 feet below the historical average for this date and 0.24 feet above the LORS 2008 simulated average. In the St. Lucie estuary, salinity conditions in the middle estuary are within the preferred range for the adult eastern oyster.

In the Caloosahatchee estuary, the seven-day average salinity values are within the good range at Cape Coral and Shell Point and in the fair range at Sanibel for adult oysters. The 30-day moving average of surface salinity is 9.7 at Ft. Myers. Salinity conditions at I-75 are near the upper limit of the good range for tape grass (*Vallisneria americana*).

WCA/Everglades National Park Water Depths and Changes

Current water levels are generally lower than a month ago, and most areas are 0.5 feet to 1.0 feet lower than they were one and two months ago. Water levels in northern WCAs 3A and 2A are below ground; Holey Land Wildlife Management Area is mostly dry, as well.

The Depth Differences maps indicate that depths are lower this week than last week everywhere. This pattern is similar to that of a month ago, except that northern WCA-2A is slightly higher now than then. Relative to a year ago, stages are mixed, with northern WCAs 2A, northwestern 3A, all of WCA-3B, and most of Everglades National Park (ENP) slightly deeper than a year ago.

Florida Bay Salinity

Salinities are generally stable across Florida Bay. Most areas are within four psu of their averages for this time of year.

Weather Conditions and Forecast

Some showers returning to the District. A cold front in north Florida will move into the District this evening and then weaken across the southern portion of the District overnight. Scattered showers will develop mainly north and northeast this afternoon and evening as the front moves into the area. Shower activity will increase, heaviest along the east coast, into Wednesday night and Thursday as upper level moisture and energy streams across the area and interacts with the frontal boundary. A

weak low is forecast to develop along the front and push it south of the District Thursday night bringing drier conditions. Moisture will then return to the area and help generate scattered showers south Friday and west Saturday.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.07 inches of rainfall in the past week and the Lower Basin received 0.06 inches (SFWMMD Daily Rainfall Report 1/27/2014).

Upper Kissimmee Basin

All lakes in the Kissimmee Chain of Lakes (KCOL) are below their water regulation schedules (Table1).

Table 1. Departures from KCOL flood regulation (F) or temporary schedules (T or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: 1/28/2014

Water Body	Structure	Schedule	Discharge (cfs), week's average**	Regulation Stage (feet) (USACE)	Lake Stage (feet) (SFWMMD Operations Control)	Departure from Schedule (feet)							
						1/26/14	1/19/14	1/12/14	1/5/14	12/29/13	12/22/13	12/15/13	12/8/13
Lakes Hart and Mary Jane	S62	F	0	61.0	60.2	-0.8	-0.8	-0.8	-0.9	-0.9	-0.9	-0.8	-0.8
Lakes Myrtle, Preston, and Joel	S57	F	8	61.5	61.2	-0.3	-0.1	0.0	0.0	-0.2	-0.2	-0.3	-0.2
Alligator Chain	S60	F	0	64.0	63.2	-0.8	-0.8	-0.7	-0.7	-0.8	-0.7	-0.7	-0.7
Lake Gentry	S63	F	0	61.5	61.3	-0.2	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
East Lake Toho	S59	F	0	58.0	56.9	-1.1	-1.1	-1.0	-1.0	-1.1	-1.1	-1.0	-1.0
Lake Toho	S61	F	294	55.0	54.5	-0.5	-0.3	-0.3	-0.4	-0.5	-0.5	-0.4	-0.4
Lakes Kissimmee, Cypress, and Hatchineha	S65	F	297	52.5	50.7	-1.8	-1.8	-1.6	-1.6	-1.7	-1.6	-1.4	-1.4

T = temporary schedule, F = USACE flood control schedule, S = temporary snail kite schedule, N/A= not applicable or data not available.

** Seven-day average of weighted daily means through Sunday midnight.

Lower Kissimmee Basin

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figures 11a and 11b. Kissimmee River floodplain stages at selected stations are shown in Figure 12.

Table 2. Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: 1/28/2014

Metric	Location	Sunday's 1-day average	Weekly Average**								
			1/26/14	1/19/14	1/12/14	1/5/14	12/29/13	12/22/13	12/15/13	12/8/13	12/1/13
Discharge (cfs)	S-65	296	297	303	313	313	312	310	303	310	314
Discharge (cfs)	S-65A	248	249	223	244	245	245	240	256	256	258
Discharge (cfs)	S-65C	278	338	301	306	308	326	314	304	276	281
Headwater stage (feet NGVD)		33.1	33.6	33.7	33.7	33.7	33.8	33.9	34.0	34.1	34.2
Discharge (cfs)	S-65D****	454	497	445	475	428	406	449	404	400	402
Discharge (cfs)	S-65E	256	283	263	277	241	229	241	235	219	285
DO concentration (mg/L)***	Phase I river channel	8.72	8.85	8.55	8.01	7.37	6.93	7.26	7.07	7.20	7.60
Mean depth (feet)*	Phase I floodplain	0.09	N/A	0.10	0.11	0.10	0.11	0.12	0.17	0.21	0.29

* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

** Seven-day average of weighted daily means through Sunday midnight.

*** DO is the average of KRBN and PC62.

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2

N/A Not applicable or data not available.

Water Management Recommendations

KRREP Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
1/22/2014	Start discharge from S61 to follow the preferred maximum snail kite recession line in Lake Toho, which has been intercepted.	Snail kite recession.	Implemented	LRE Operations
1/21/2014	No new recommendations.			
1/14/2014	No new recommendations.			
1/7/2014	No new recommendations.			
12/31/2013	No new recommendations.			
12/24/2013	No new recommendations.			
12/17/2013	No new recommendations.			
12/10/2013	S65C headwater stage recession rate increased to 0.3 foot per week.	Allow southern floodplain to dry over dry season.	Implemented	KRREP
12/3/2013	No new recommendations.			
11/26/2013	No new recommendations.			
11/19/2013	No new recommendations.			
11/12/2013	No new recommendations.			
11/5/2013	No new recommendations.			
10/29/2013	No new recommendations.			
10/26/2013	Continue current recommendations into dry season (~300 cfs from S65/S65A until further notice).	Control lake stage decline; reflects low rainfall.	Implemented	KRREP
10/22/2013	No new recommendations.			
10/11/2013	With flow at PC62 down to 600 cfs, the headwater stage at S-65C will be lowered at 0.1 foot per week until it reaches 33.6 feet	Reflects decreased inflows		Operations Control/ KRREP
10/7/2013	Discharge reduced from 440 cfs to 300 cfs at S65A and from 2000 cfs to 1100 cfs at S65C; headwater stage lowered at S65C to 34.2 feet per standing guidance for S65C HW stage	Reflects decreased inflows	Implemented	Operations Control/ KRREP
10/1/2013	Reduce discharge at S65/S65A to 300 cfs after reestablishing buffer below regulation line.	Allow lake stage to rise	Implemented	KRREP
10/1/2013	Reduce discharge at S65/S65A from ~800 cfs to ~500 cfs	Anticipate dry week	Implemented	Operations Control
9/30/2013	S65 reduced by 300 cfs from about 1,180 cfs to about 770 cfs; S65A reduced by 300 cfs from 1,464 to about 1173 cfs.	Anticipate dry week	Implemented	Operations Control
9/24/2013	Increase S65A discharge from appx. 600 cfs by appx. 600 cfs; continue rampup per maximum rates of increase listed in current standing recommendation (600 cfs/day when between buffer stage and regulation stage).	Anticipate increase in upstream inflow resulting from rainfall	Implemented	Operations Control
9/23/2013	Increase S65 discharge from appx. 300 cfs to appx. 600 cfs.	Anticipate forecast rainfall	Implemented	Operations Control
9/22/2013	Maintain S65C HW stage at 35.4 ft at 1800 cfs at PC62 per standing guidance for S65C HW stage.	Align lower Phase I area with upstream discharge	Implemented	KRREP
9/17/2013	Maintain reduced flow until further notice.	Conserve water in Lakes Kissimmee/Cypress/Hatchineha due to drier forecast conditions	Implemented	KRREP
9/14/2013	Reduce S65 flow from 520 cfs to 300 cfs.	Conserve water in Lakes Kissimmee/Cypress/Hatchineha due to drier forecast conditions	Implemented	Operations Control
9/10/2013	Reduce discharge at S65 by from 840 to 540 cfs.	Conserve water in Lakes Kissimmee/Cypress/Hatchineha due to drier forecast conditions	Implemented	Operations Control
9/4/2013	Reduce S65 discharge from 1260 cfs to 800 cfs.	Conserve water in Lakes Kissimmee/Cypress/Hatchineha due to drier forecast conditions	Implemented	KRREP

KCOL Hydrographs (through Sunday midnight)

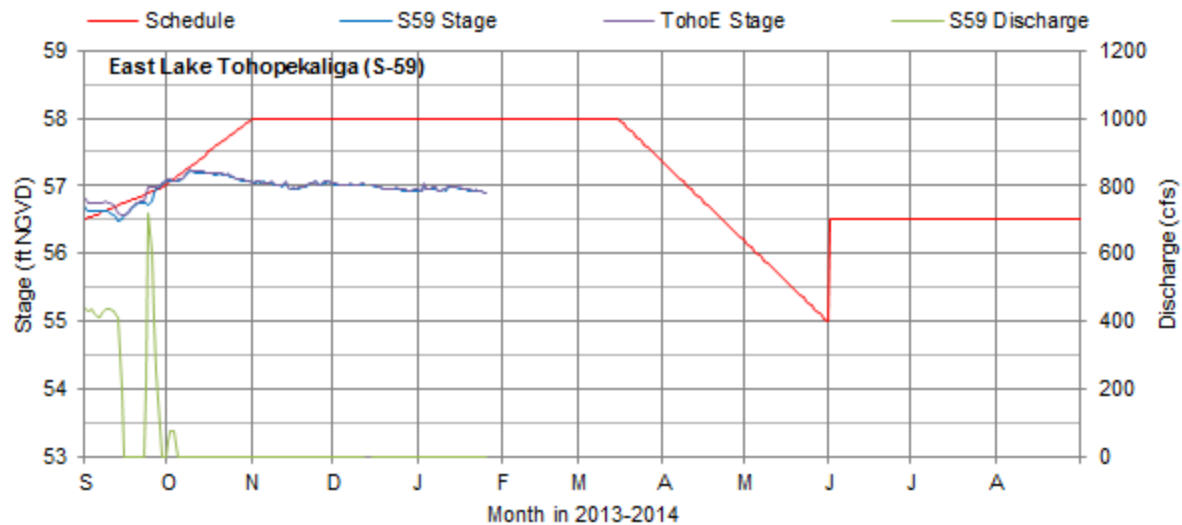


Figure 1.

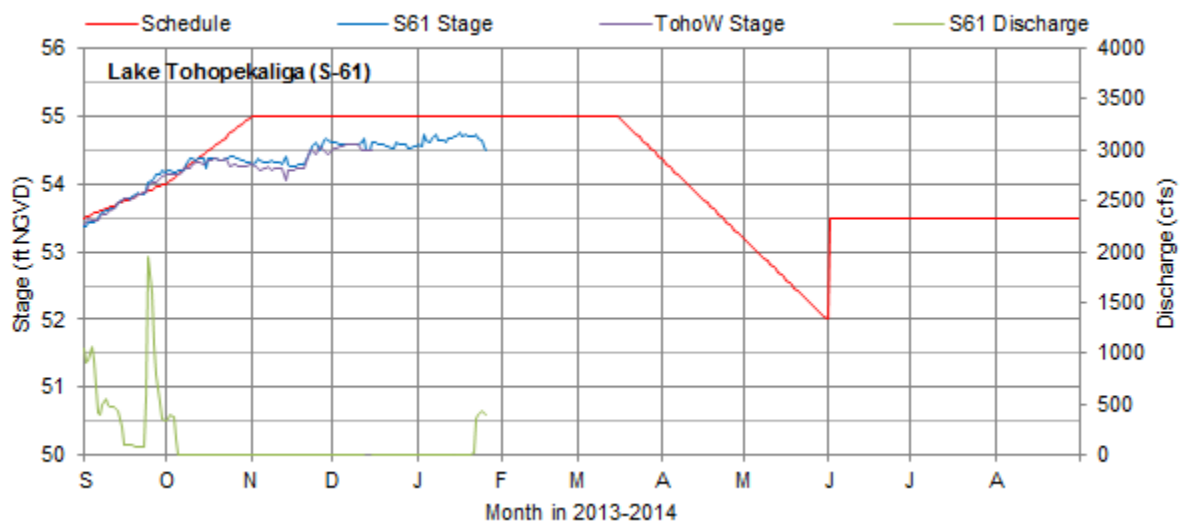


Figure 2.

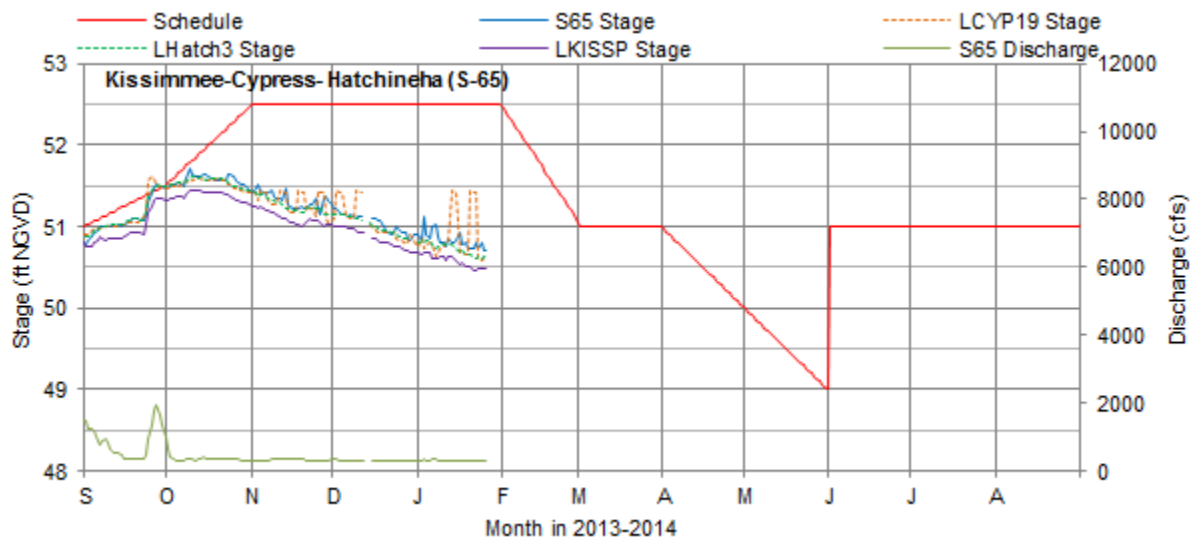


Figure 3.

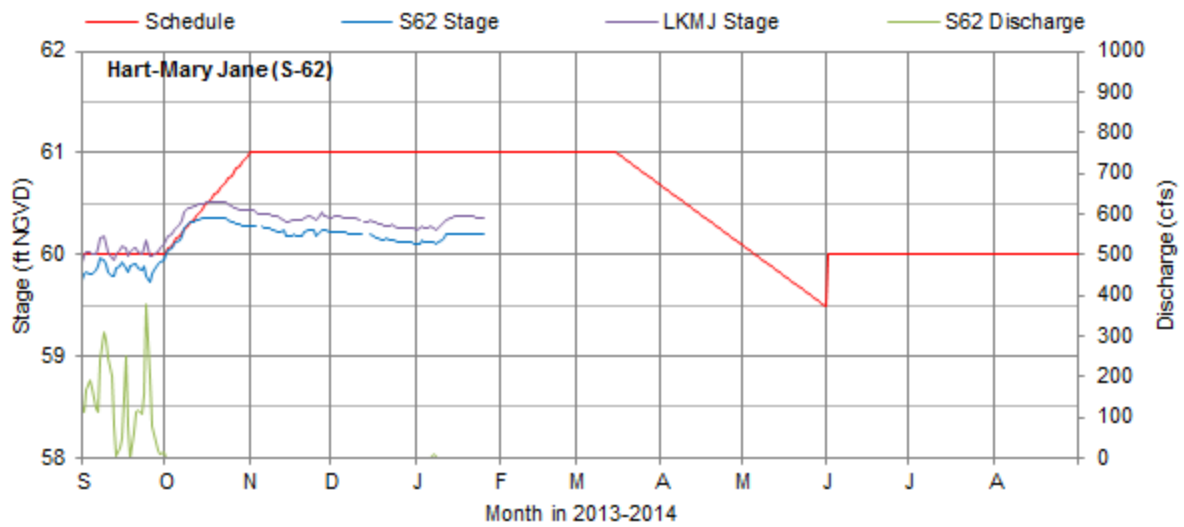


Figure 4.

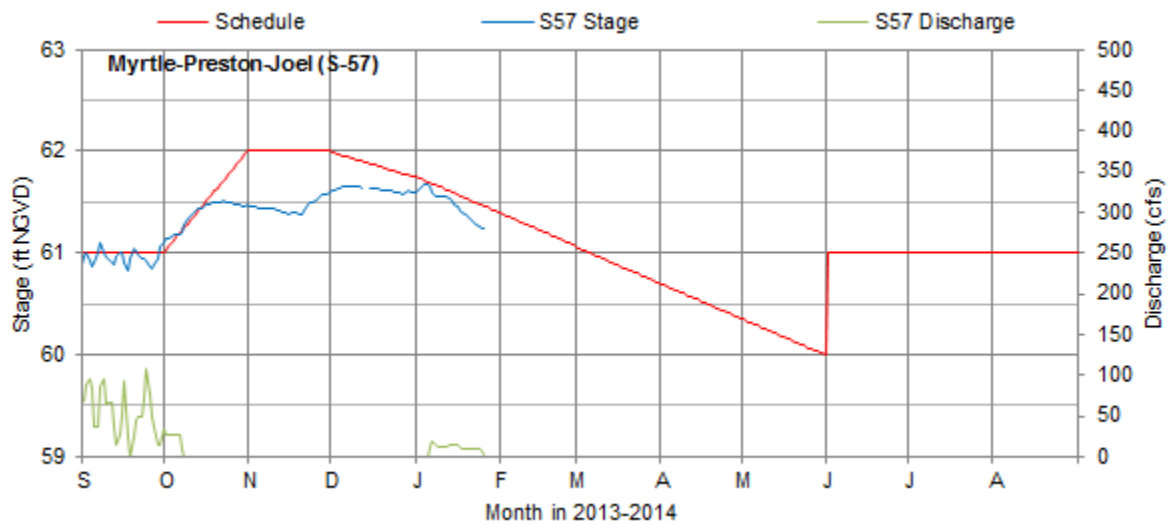


Figure 5.

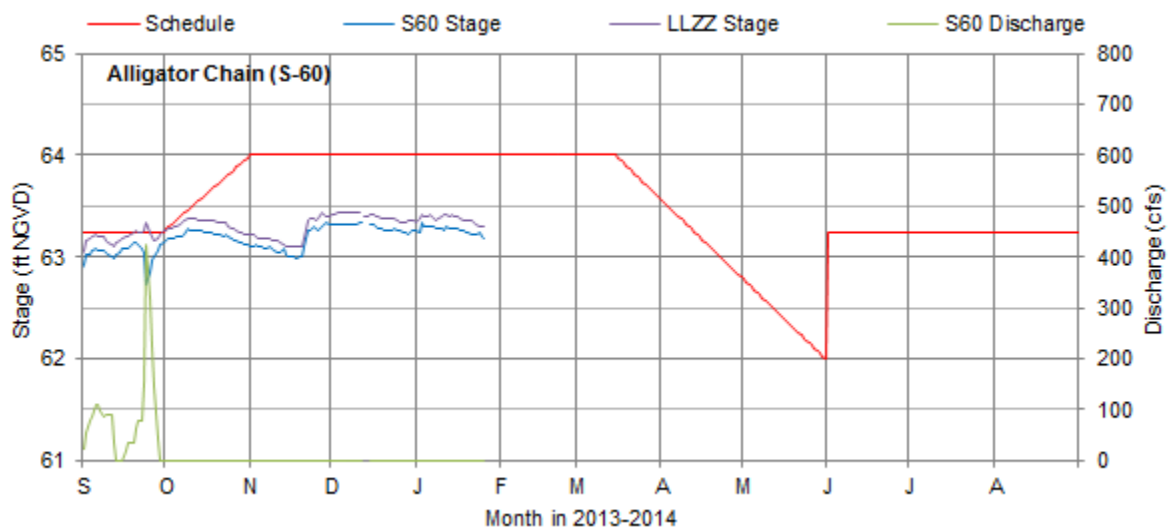


Figure 6.

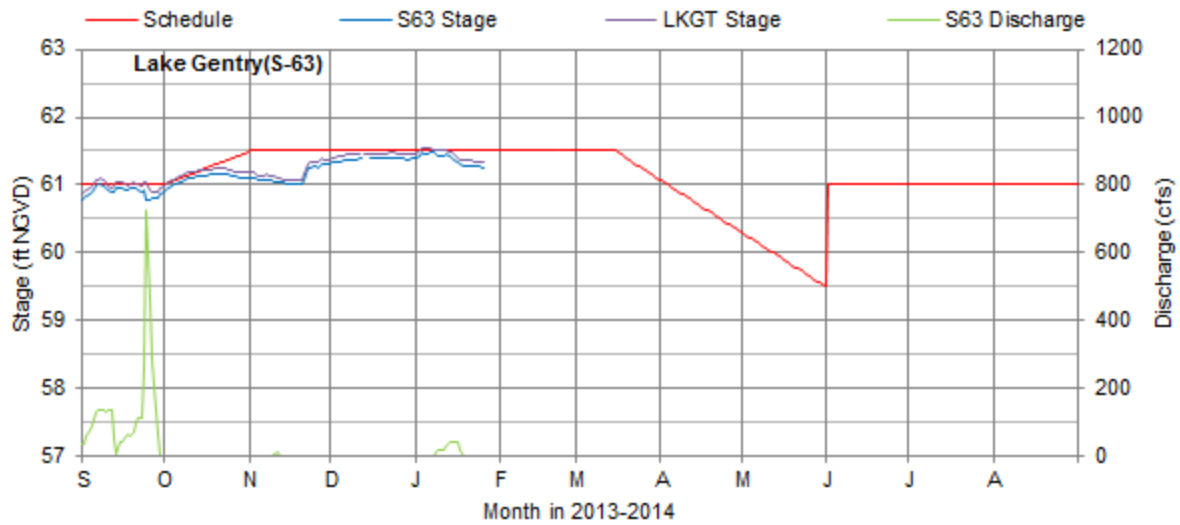


Figure 7.

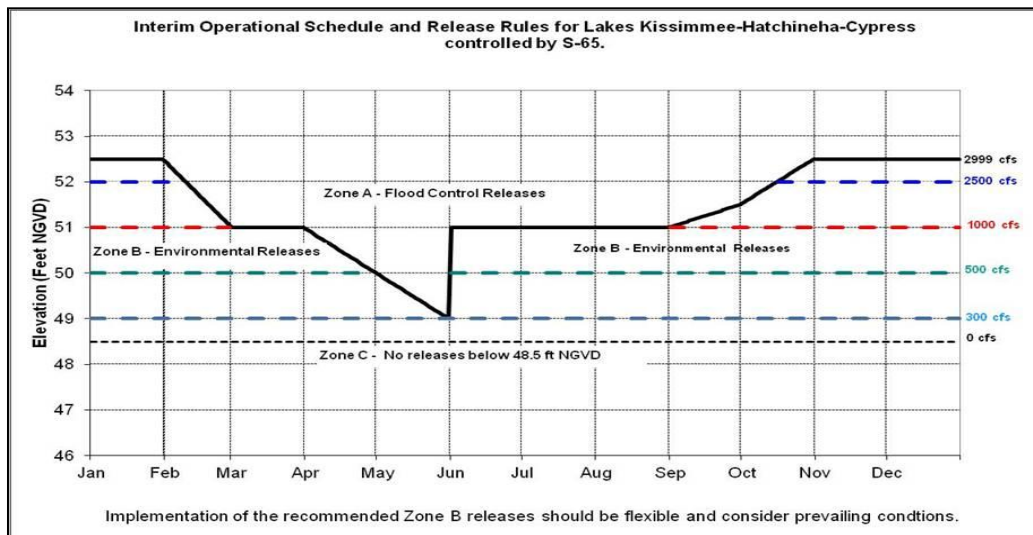


Figure 8. Interim operations schedule for S-65.

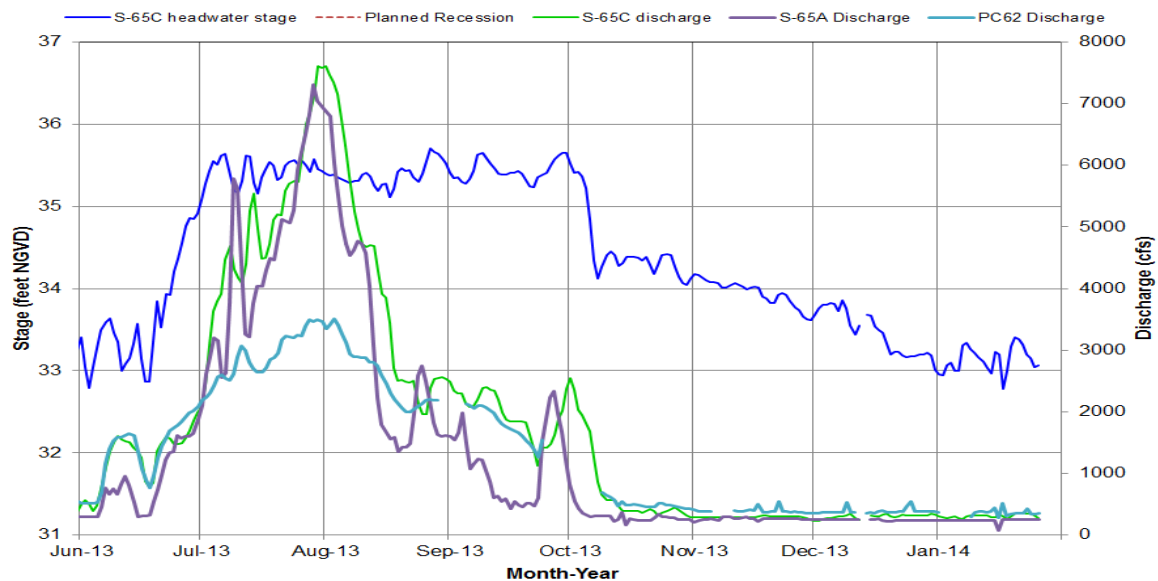


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

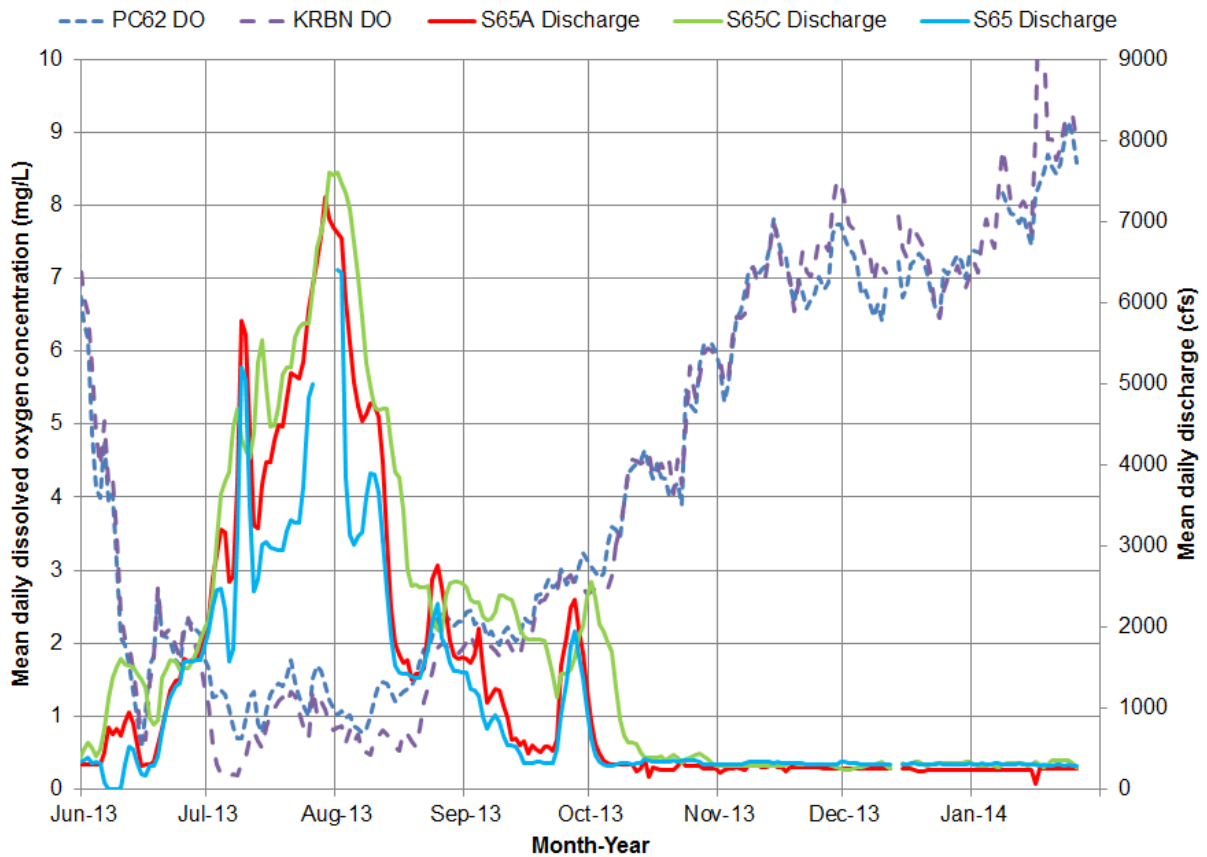
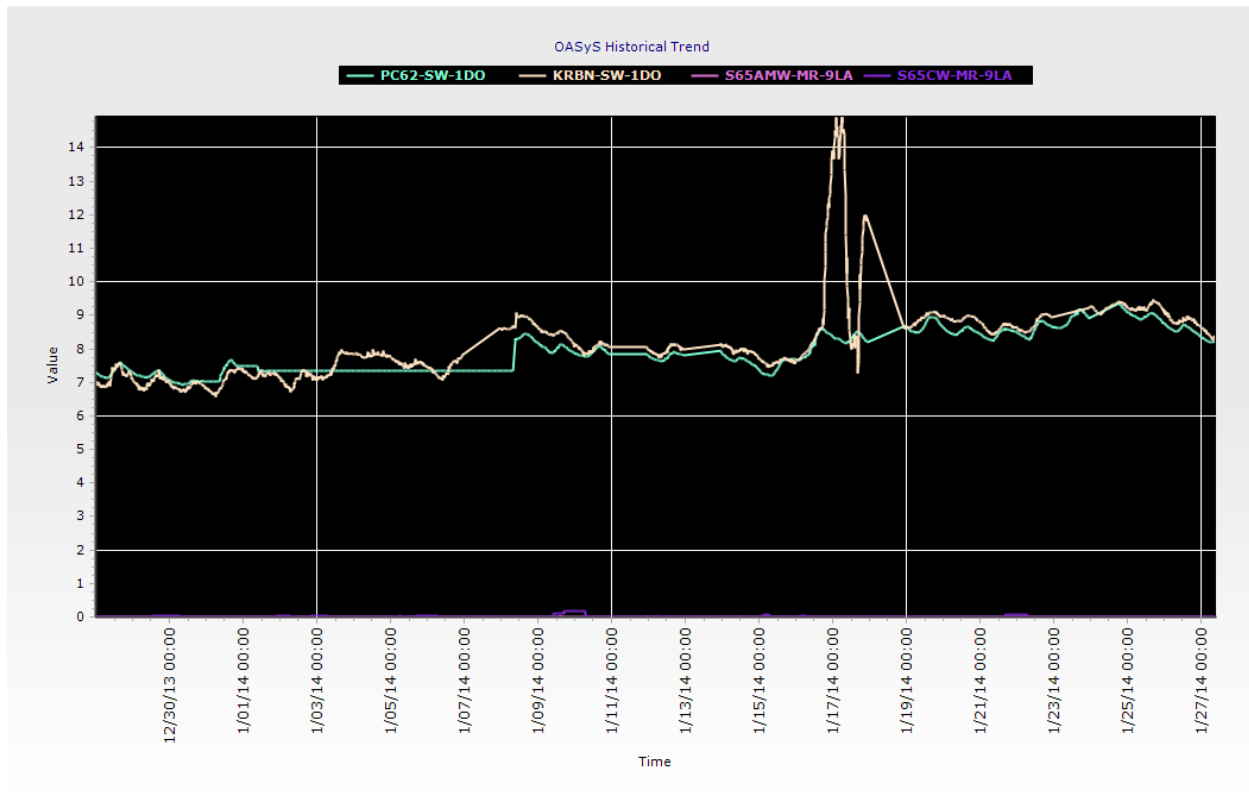


Figure 10. Mean daily DO in the Phase I river channel and discharge at S-65, S-65A and S-65C.



Insert A. Phase I river channel DO (measured at 15 minute intervals) and rainfall at S65A and S65C.

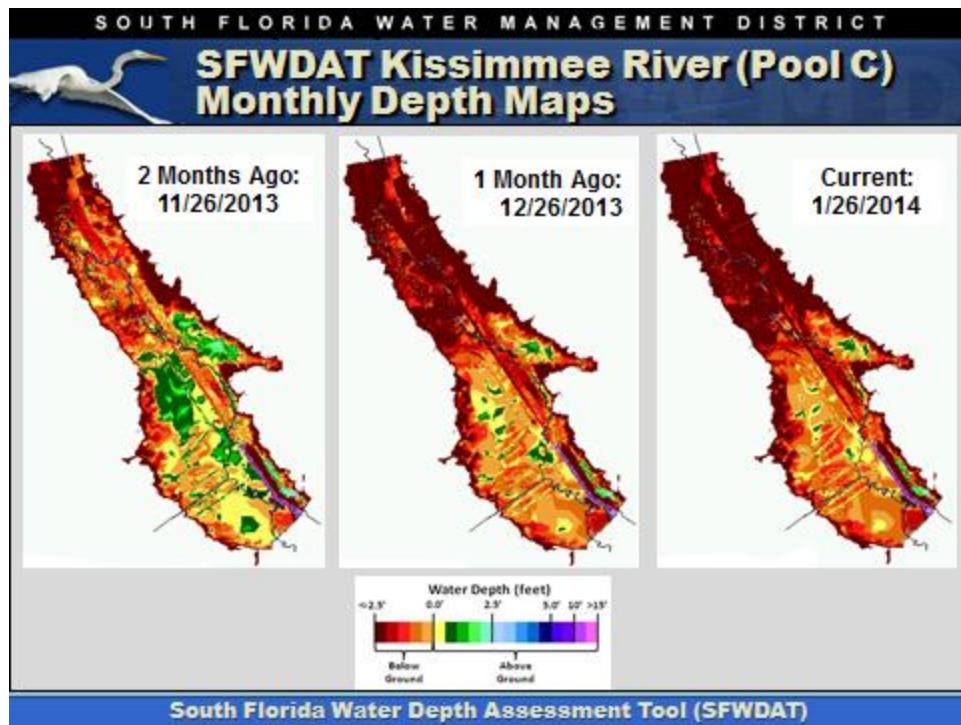


Figure 11a. Pool C floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.

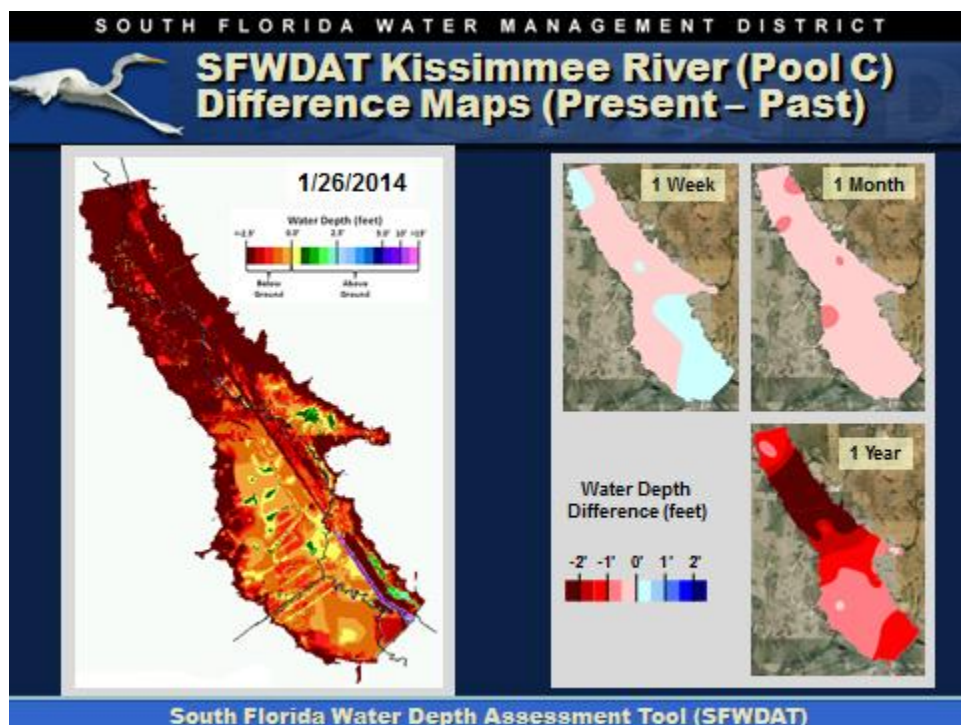


Figure 11b. SFWDAT Pool C floodplain water depths and difference maps. Color-coding for the difference maps seen in the right panel has not changed.

Kissimmee River Hydrographs

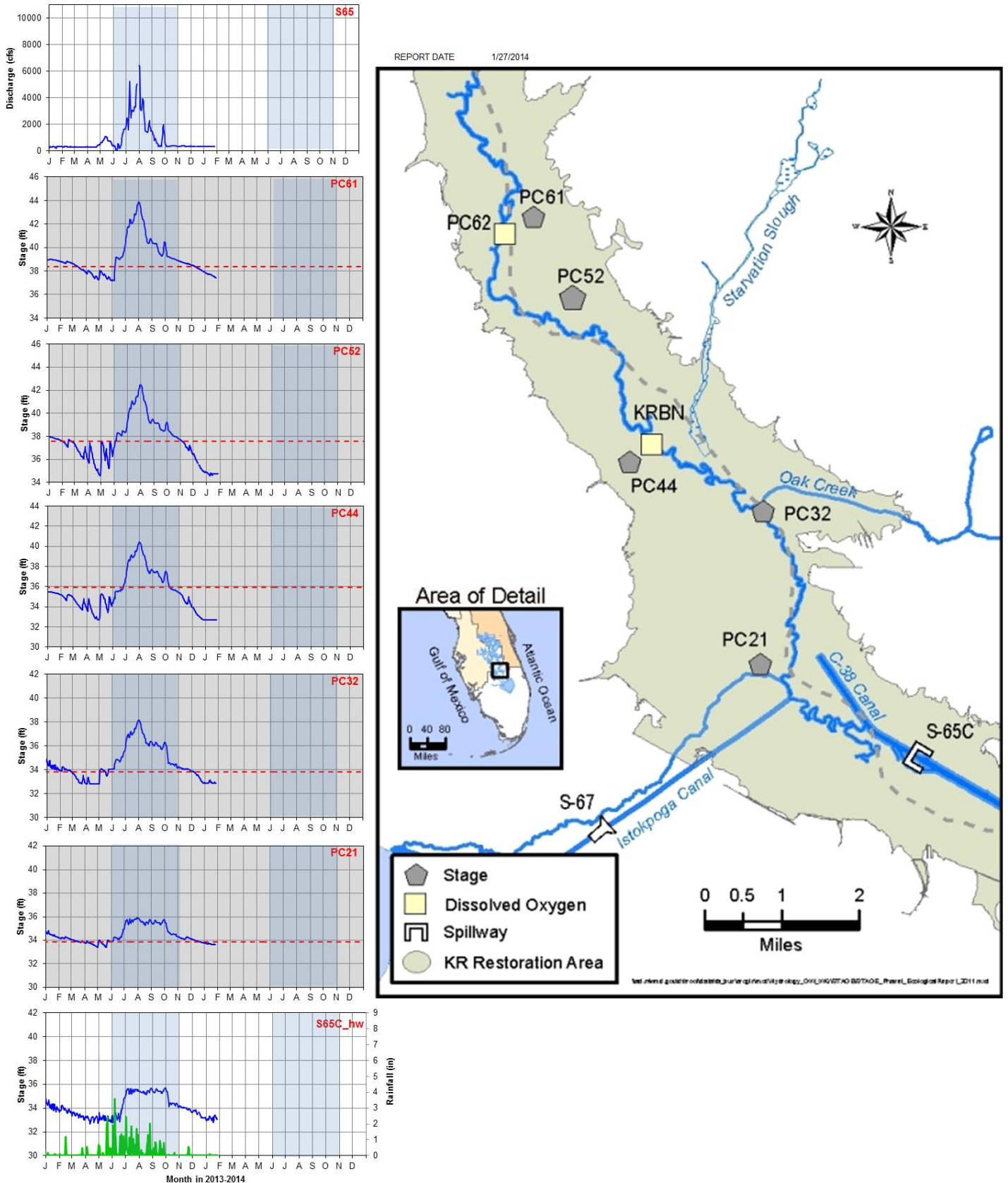


Figure 12. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2011. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

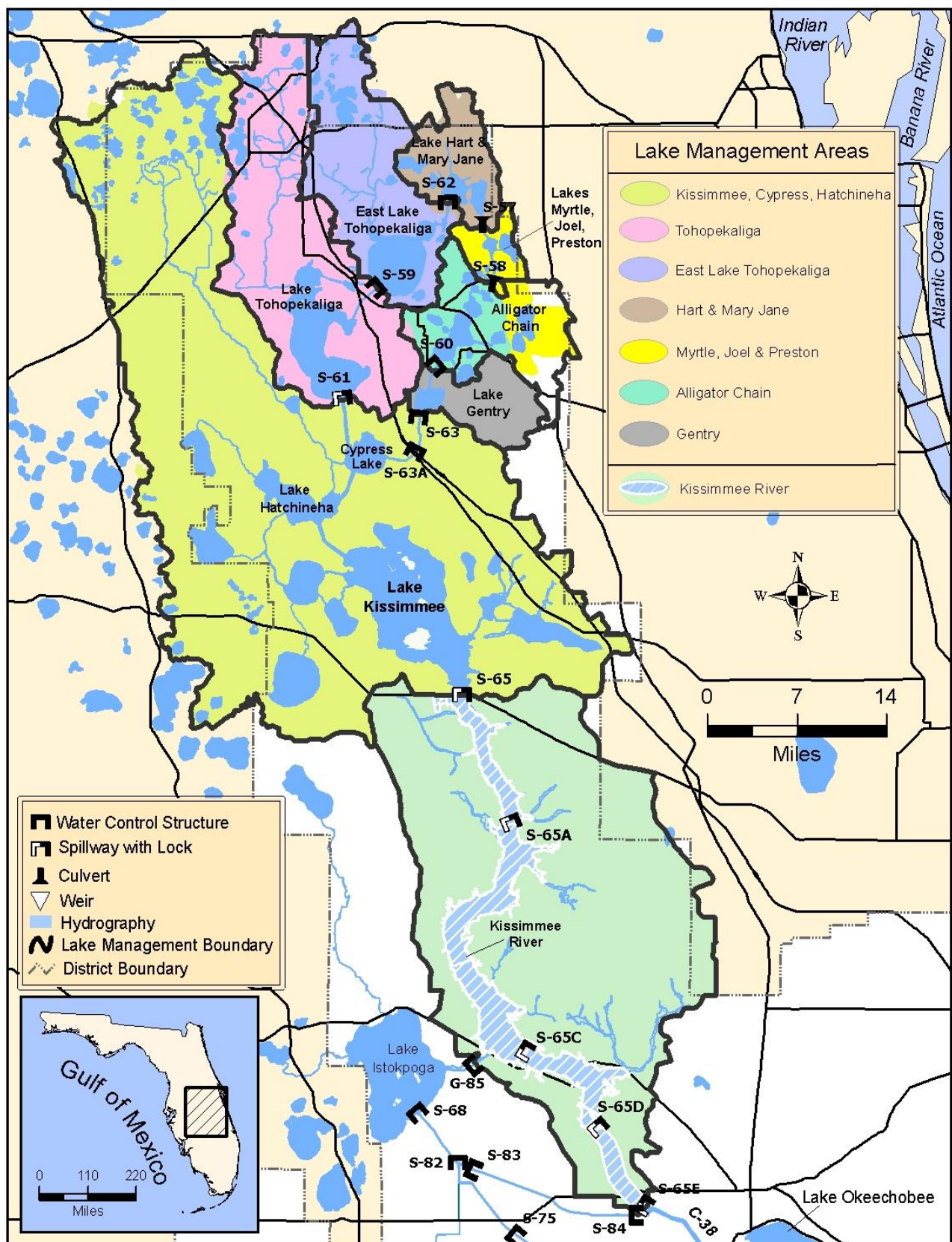


Figure 13. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 13.79 feet NGVD for the period ending at midnight on January 27, 2014. This value is based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and the following four perimeter stations (S-352, S-4, S-308 and S-133). Lake stage showed a net decrease of 0.12 feet over the past seven days. It is now 0.43 feet lower than it was a month ago and 0.92 feet lower than it was a year ago (Figure 1). The Lake is currently in the low sub-band but only 0.09 feet above the base flow sub-band (Figure 2). The current stage is 0.90 feet below the historical average for this date and 0.24 feet above the LORS 2008 simulated average. According to RAINДАР, 0.02 inches of rain fell directly over the Lake during the past seven days. The surrounding watershed experienced similar or slightly greater amounts over the past week (Figure 3).

Current Lake inflow is approximately 242 cfs consisting of flows as indicated below.

Structure	Flow cfs
S65E	220 (275 weekly average)
S154	0
S84	0
S71	0
S72	0
C5	0
S191	0
S133 PUMPS	0
S127 PUMPS	19
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	3
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Outflows from the Lake total approximately 2375 cfs with approximately 213 cfs exiting through the L8, 407 cfs exiting through S-77 and the balance exiting through S-351, S-252, and S-354. Water supply demands have increased compared to the previous week.

Corrected evapotranspiration on January 20, 2014 was equivalent to approximately 920 cfs.

Lake Okeechobee field scientists conducted a foraging wading bird survey on January 23, 2014. Twenty-one flocks and over 9000 birds were recorded (Figure 4). This is nearly three times the maximum value for numbers of birds using the Lake in January recorded in the four years since the surveys were re-initiated.

Water Management Recommendations

The Lake has fallen back into the ecologically desirable stage envelope and the winter spring recession rate have been nearly ideal. As the wading bird nesting season begins, the desire is to maintain this recession rate through May or June and avoid reversals in Lake stage. A steady recession rate is also beneficial to snail kites. Successful apple snail recruitment is also dependent on

lower Lake stages and a lack of reversals, which can drown egg masses, particularly in the March to June time frame.

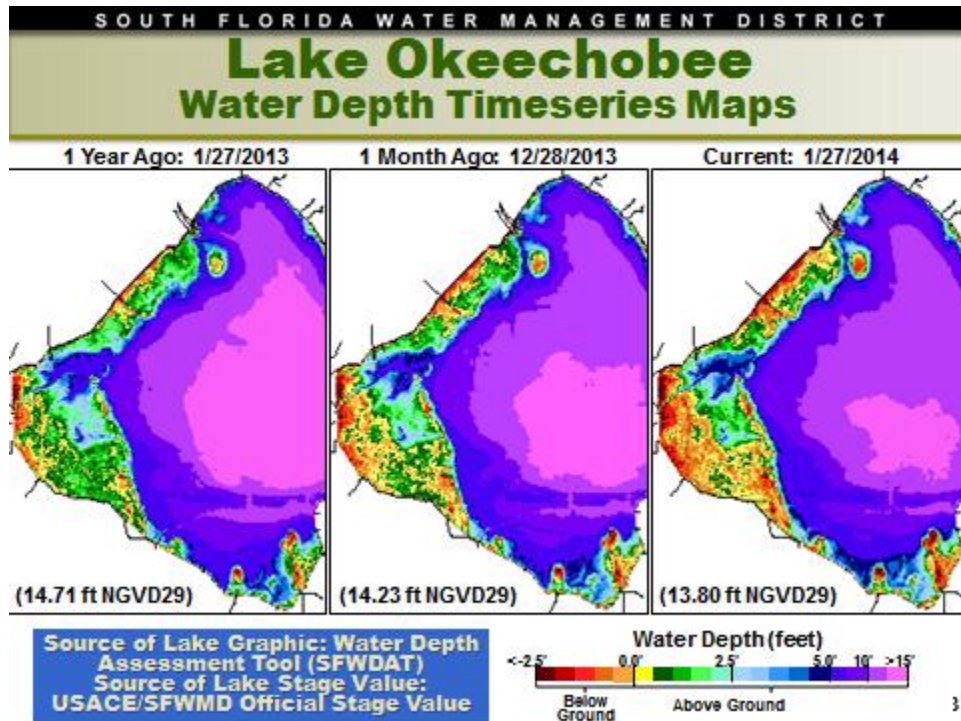


Figure 1

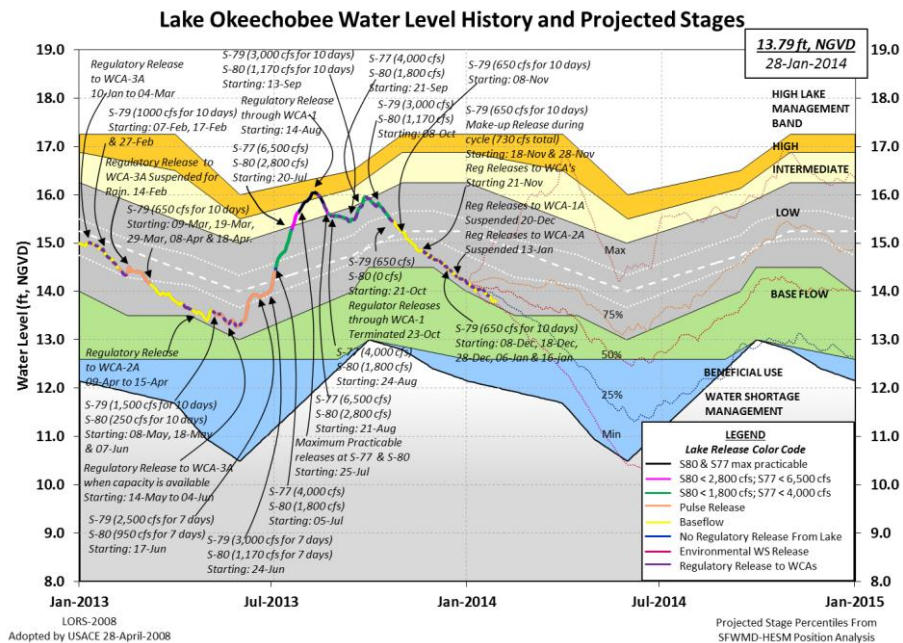
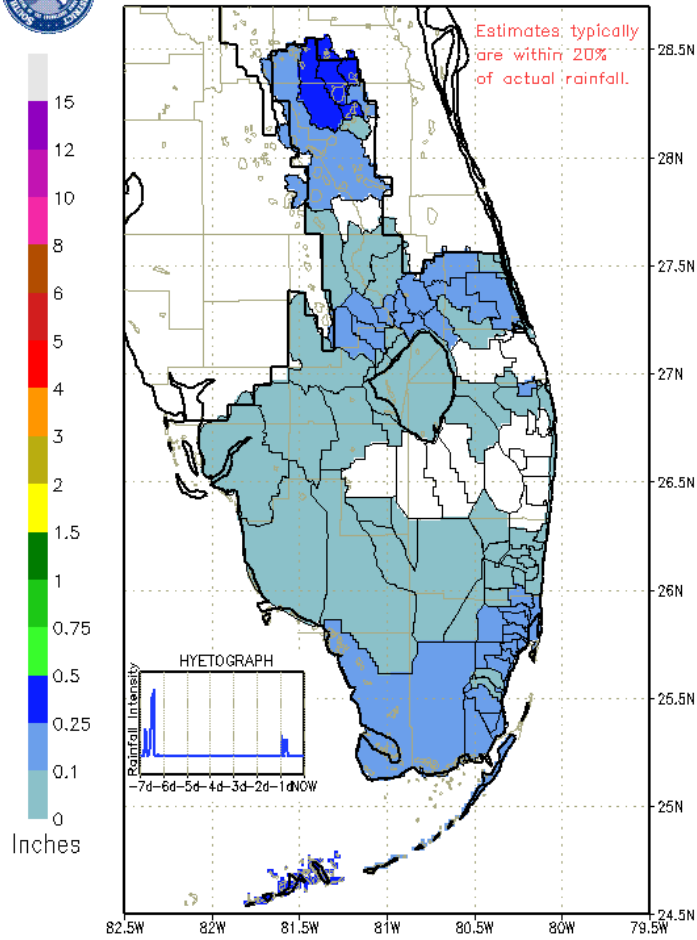


Figure 2



SFWMD RAINDAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0315 EST, 01/21/2014 THROUGH: 0315 EST, 01/28/2014



DISTRICT-WIDE RAINFALL ESTIMATE: 0.064"

Figure 3

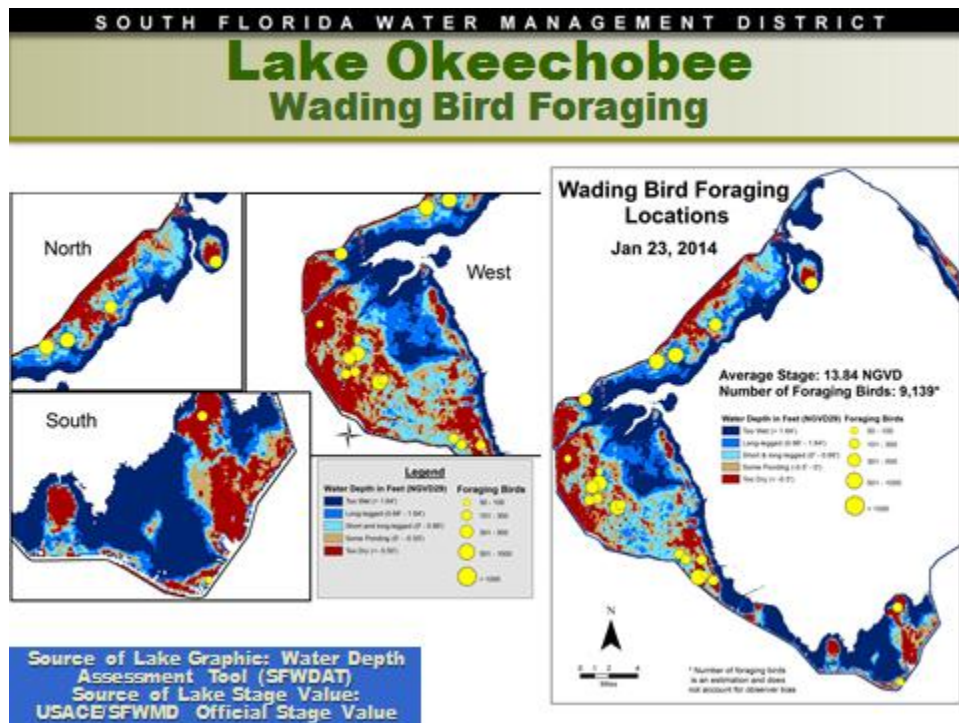


Figure 4

Lake Istokpoga

According to the USACE web site, Lake Istokpoga stage on January 28, 2014 was 39.22 feet NGVD. The Lake is currently 0.28 feet below the top of its regulation schedule, which has reached its annual high pool stage (Figure 5). Average flows into the Lake from Arbuckle and Josephine creeks for the past seven days were 110 cfs and 19 cfs respectively. There were no discharges from S-68 this past week. According to RAINDAR, 0.06 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

Because of the limited vertical range of the Lake Istokpoga regulation schedule, fluctuations in Lake level have minimal impacts on Lake ecology.

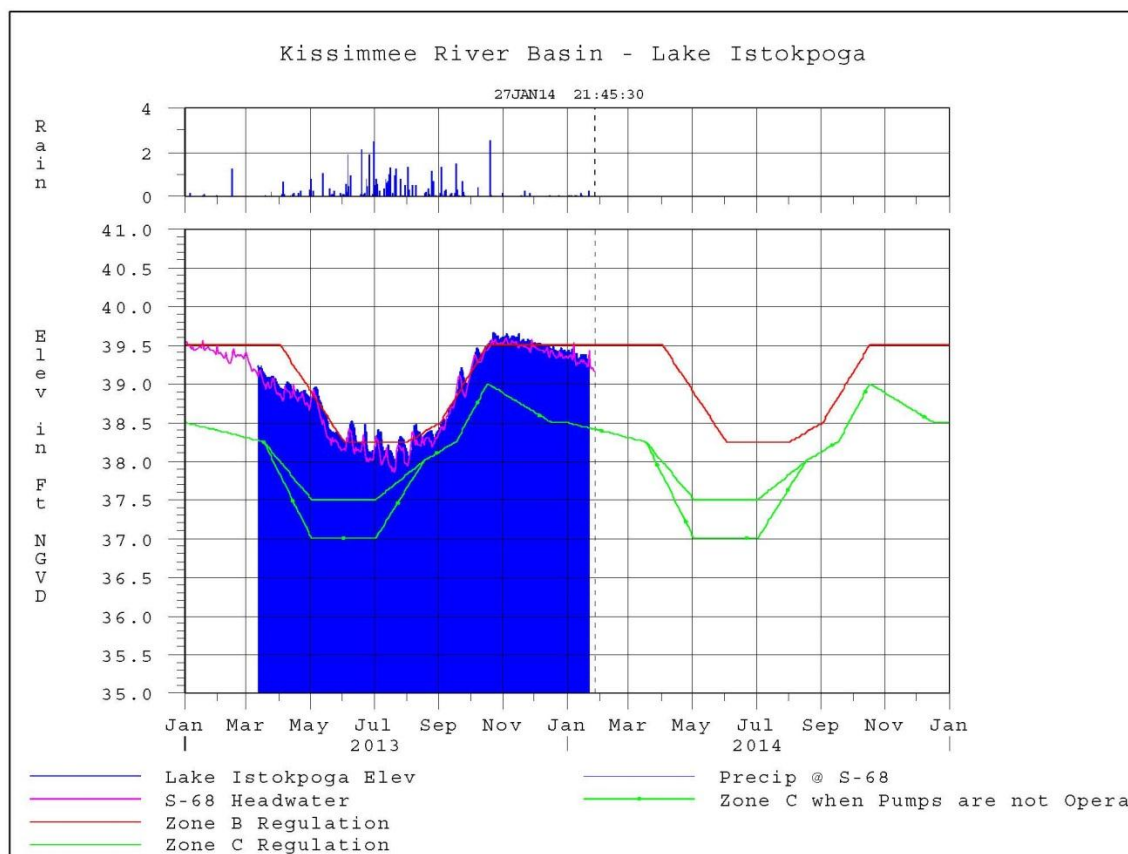


Figure 5

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flow results averaged 0 cfs at S-80 and S-308, 36 cfs at S-49 on C-24, 8 cfs at S-97 on C-23, and 133 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be approximately 112 cfs (Figures 1 and 2). Salinity values given in this report are based on the practical salinity scale. The current weekly average salinity (in bold) at the three monitoring sites in the St. Lucie Estuary are given below, along with the previous week's (in parenthesis). The preferred (good) salinity range for adult eastern oysters (*Crassostrea virginica*) within the middle estuary is indicated by the envelope given in the table.

Seven-Day Average Salinity			
Sampling Site	Surface	Bottom	Envelope
HR1 (N. Fork)	NR ¹ (NR)	NR (NR)	NA ²
US1 Bridge	14.3 (8.9)	16.8 (12.3)	10.0-26.0
A1A Bridge	21.6 (16.7)	25.4 (22.0)	NA

¹Not Reporting; ²Envelope not applicable.

Over the past week, average salinity increased throughout the estuary (Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is 15.5. Salinity conditions in the middle estuary are within the preferred range for the adult eastern oyster.

Caloosahatchee Estuary

During the past week, provisional flow results averaged approximately 448 cfs at S-77, 332 cfs at S-78, and 434 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 120 cfs (Figures 5 and 6). The seven-day average salinity (in bold) at the six monitoring sites in the Caloosahatchee estuary are given below, along with the previous week's (in parenthesis). A good salinity range for tape grass at station Val I75 is between zero and five. A good salinity range for adult oysters within the estuary between Cape Coral and Sanibel Bridges is indicated by the envelopes given in the table.

Seven-Day Average Salinity			
Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	2.7 (3.6)	2.7 (3.6)	NA ¹
Val I75	3.3 (4.6)	5.3 (6.5)	0.0-5.0 ²
Ft. Myers Yacht Basin	9.0 (10.2)	12.3 (11.8)	NA
Cape Coral	17.7 (18.2)	19.4 (19.0)	10.0-30.0
Shell Point	27.1 (27.6)	27.3 (27.4)	10.0-30.0
Sanibel	30.1 (30.2)	30.9 (30.8)	10.0-30.0

¹Envelope not applicable. ²Envelope is based on a 30-day average.

Over the past week, average salinity was lower in the upper estuary and remained about the same in the lower estuary (Figures 7 and 8). The seven-day average salinity values are within the good range at Cape Coral and Shell Point and in the fair range at Sanibel for adult oysters (Figure 9). The 30-day moving average of surface salinity is 4.0 at Val I75 and 9.7 at Ft. Myers. Salinity conditions at I-75 are near the upper limit of the good range for tape grass (*Vallisneria americana*).

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation indicated that dissolved oxygen concentrations ranged between 6.5 and 9.8 mg/L at Beautiful Island, between 6.0 and 8.3 mg/L at Ft. Myers, and between 7.5 and 9.2 mg/L at Shell Point. Chlorophyll *a* concentrations at Beautiful Island generally ranged between 5.0 and 25.0 µg/L, between 8.8 and 19.0 µg/L at Ft. Myers, and between 2.0 and 15.0 µg/L at Shell Point (with spikes above 20.0 µg/L for half the day on January 25).

The Florida Fish and Wildlife Research Institute reported on January 24, 2014, *Karenia brevis*, the Florida red tide organism, was detected in background concentrations in two samples collected inshore of Sarasota County this week. Other samples analyzed this week from southwest Florida did not contain *K. brevis*.

Water Management Recommendations

St. Lucie Estuary Performance Measure (PM) update:

The seven-day moving average (mean) of surface salinity at the US1 Bridge is being utilized as an indicator of estuarine health since it is located mid-estuary. Salinity at this location should range from ten to 26 based on the most favorable salinity conditions for the adult eastern oyster in the middle estuary. The seven-day mean salinity at the US1 Bridge is within the preferred range. Because Lake Okeechobee's water level is within the Low Sub-band, and the tributary hydrological conditions are normal, a release at S-80 up to 200 cfs is suggested by the Lake Okeechobee Regulation Schedule.

Recommendation: Supplemental releases of freshwater from Lake Okeechobee are not recommended. Local sources (runoff and ground water) are currently keeping salinities within the preferred range.

Caloosahatchee Estuary Performance Measure (PM) update:

The salinity PM being utilized for the Caloosahatchee Estuary is in accordance with the "Final Adaptive Protocols for Lake Okeechobee Operations (September 16, 2010)". The 30-day moving average (mean) salinity at Station Val I75 (I-75 Bridge) is being utilized as an indicator of estuarine health. Salinity at this location should be maintained below five based on the most favorable conditions for tape grass. The District predicts freshwater inflows to forecast the 30-day mean salinity two weeks into the future at the I-75 Bridge without supplemental Lake-water releases. If predicted salinity is greater than five at any time within the next two weeks, the estuary needs inflow from S-79 to lower the salinity in the upper estuary where tape grass could be present. The 30-day mean salinity is forecasted to rise to five within two weeks (Figure 10). Since Lake Okeechobee's current water level is within the Low Sub-band and the tributary hydrological conditions are normal, up to 450 cfs (average daily flow) is suggested to be released from S-79 with water made up from the Lake as needed. Up to 650 cfs may be released with 200 cfs added that is not currently needed in the St. Lucie Estuary. The forecast predicts that the 30-day mean salinity will remain below five at I-75 if a 650 cfs pulse is released from S-79.

Recommendation: Salinity conditions in the lower estuary are good. Salinity near the I-75 Bridge is increasing, so the freshwater inputs at S-79 are likely needed to keep the salinity below five. Following the Lake Okeechobee Regulation Schedule should allow salinity to continue to be good in the lower estuary while maintaining conditions conducive for submerged aquatic vegetation in the estuary upstream of Ft. Myers. To mitigate potential stratification and phytoplankton accumulation in the water column, the release from S-79 should be pulsed. Suggested pulse schedules are below.

10-day pulse			7-day pulse		
Day	450 cfs	650 cfs	Day	450 cfs	650 cfs
1	1100	1300	1	1000	1450
2	1600	1900	2	1200	1700
3	850	1300	3	600	900
4	500	900	4	350	500
5	350	700	5	0	0
6	100	400	6	0	0
7	0	0	7	0	0
8	0	0			
9	0	0			
10	0	0			

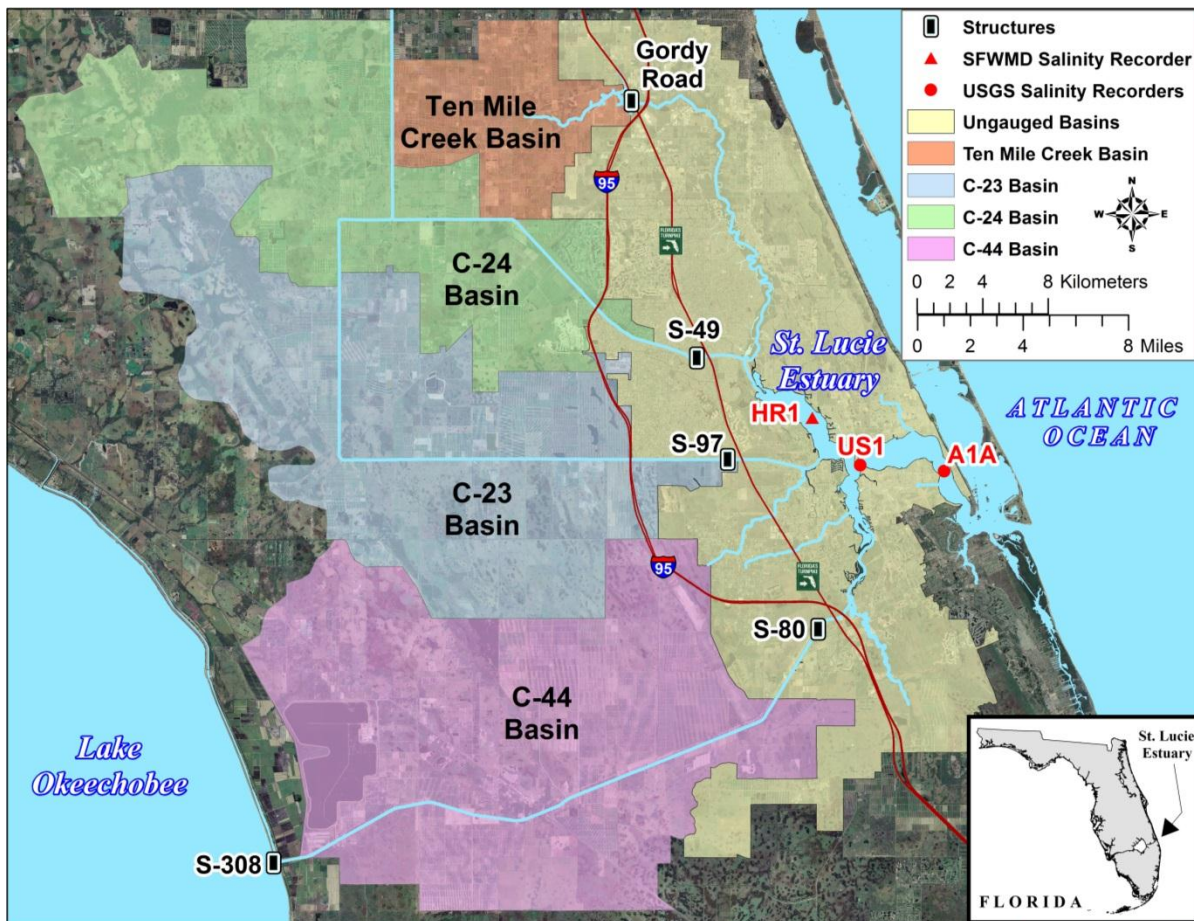


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

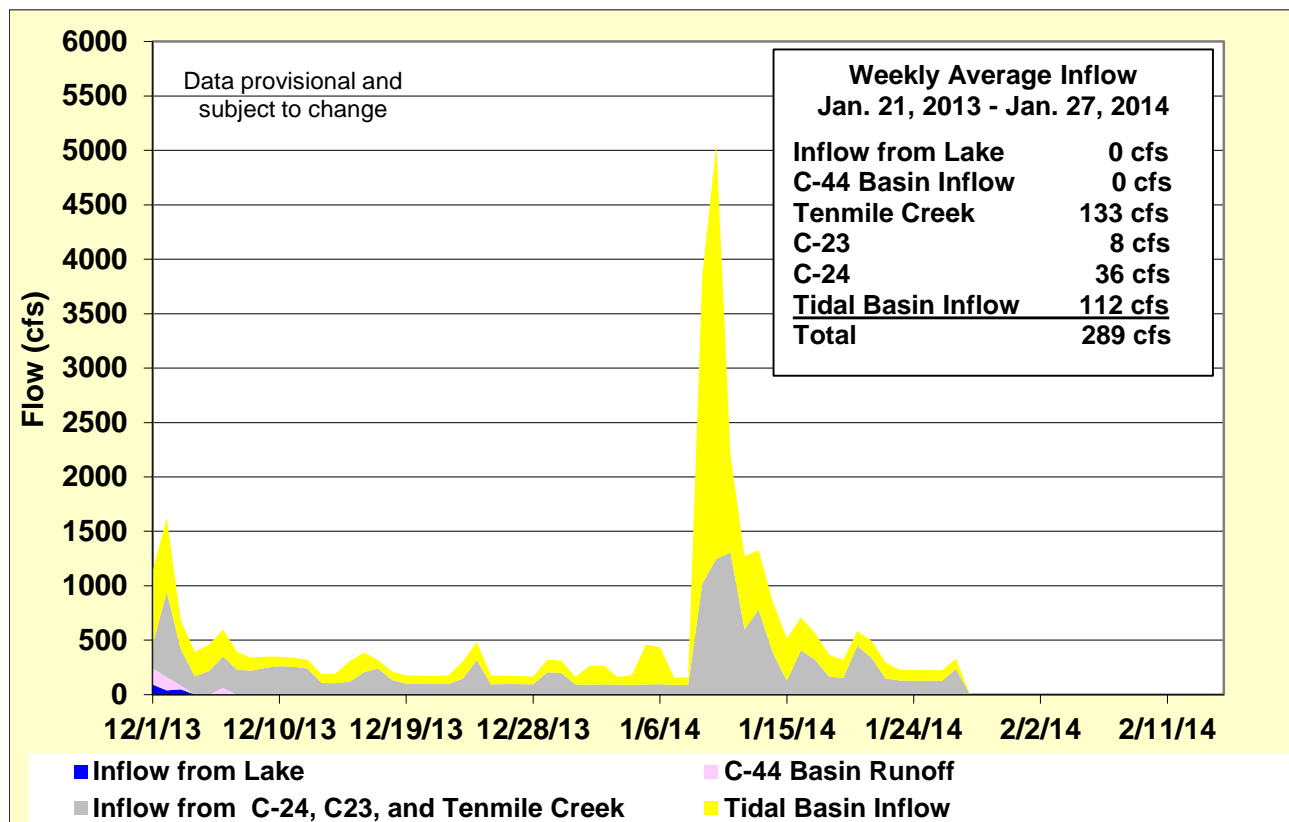


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

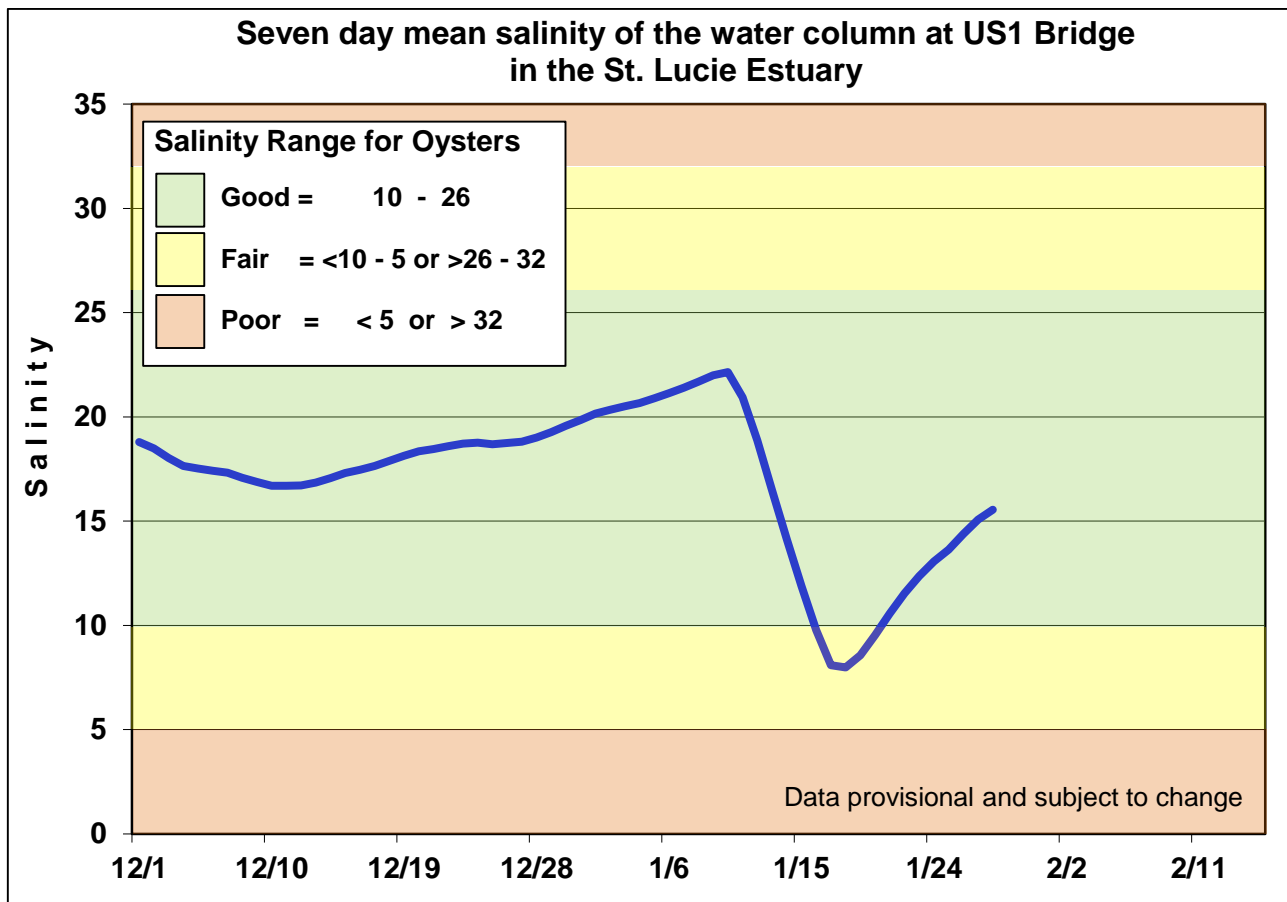


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

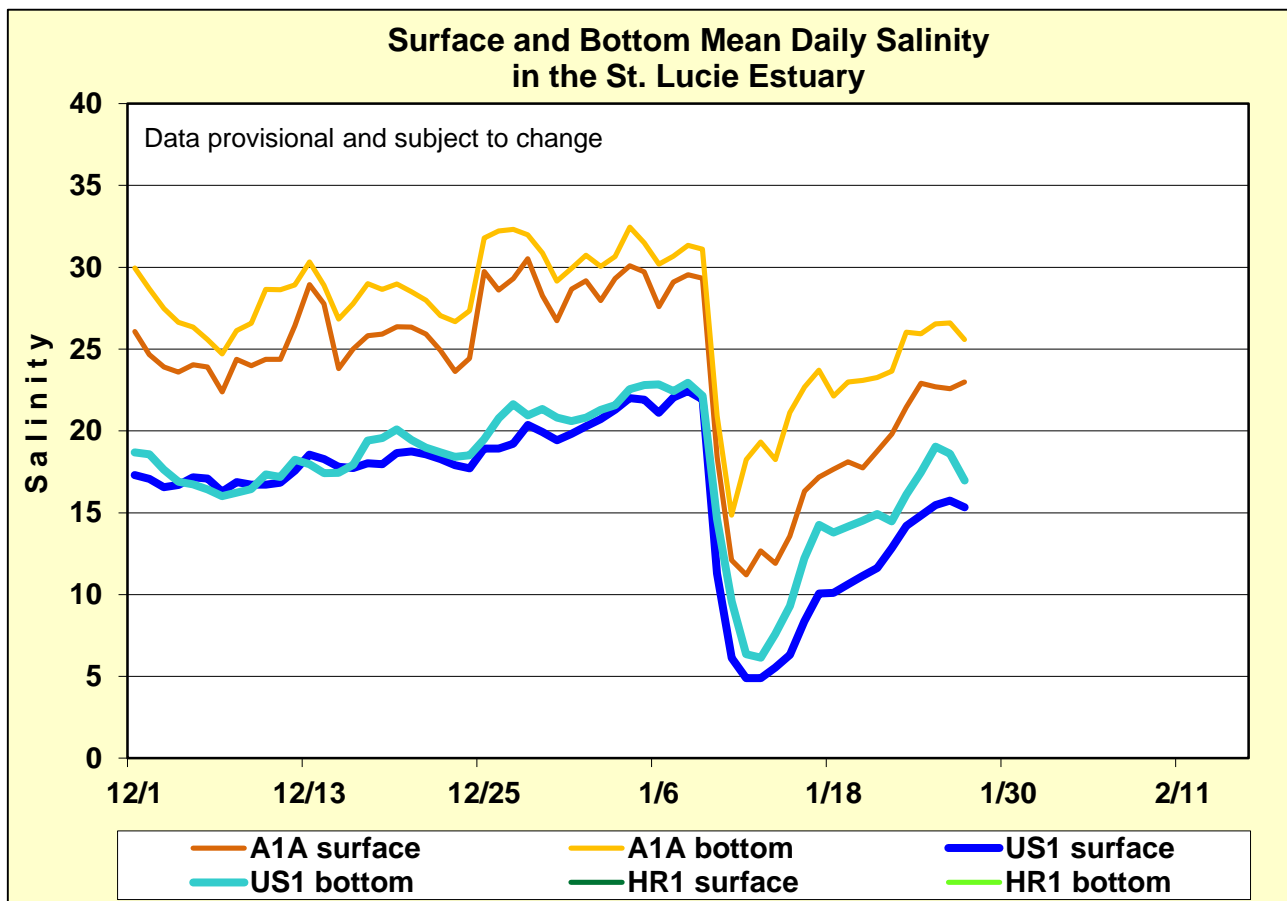


Figure 4. Daily mean salinity at the A1A, US1 and HR1 stations.

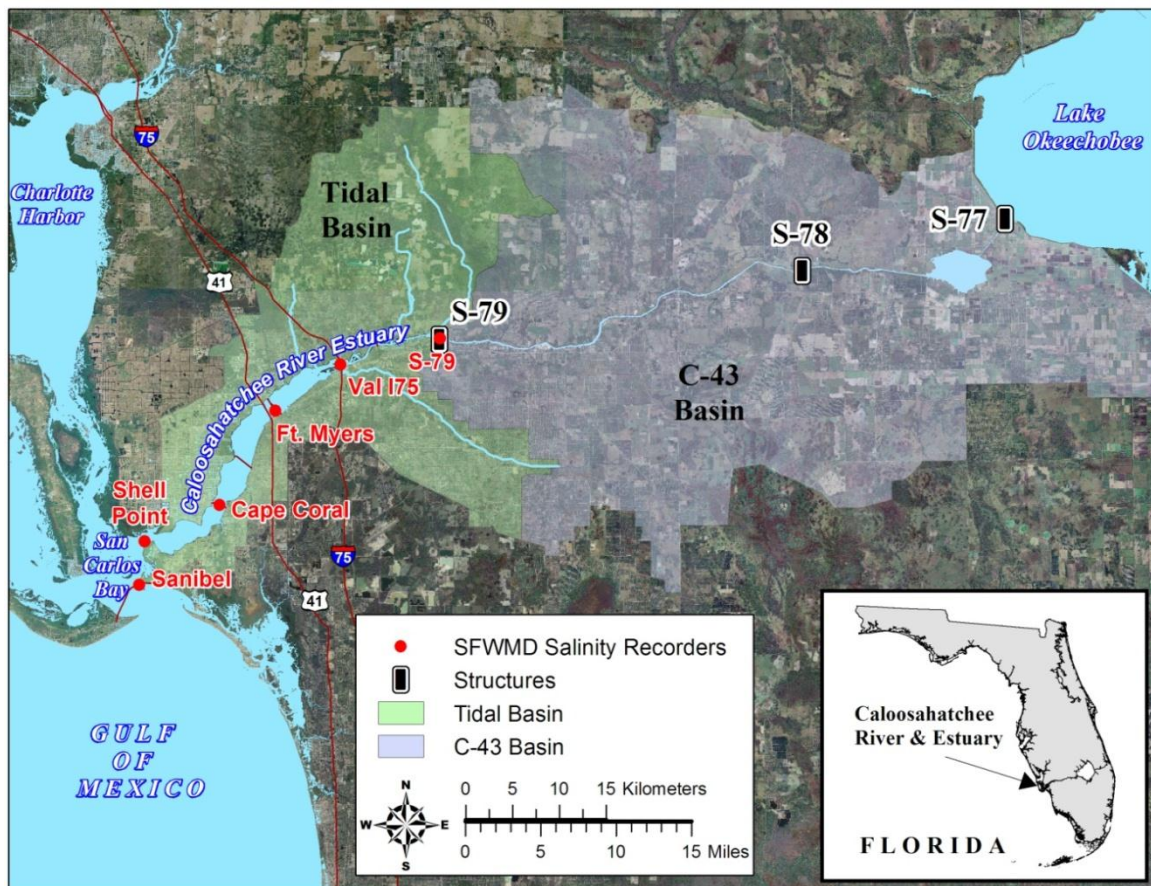


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

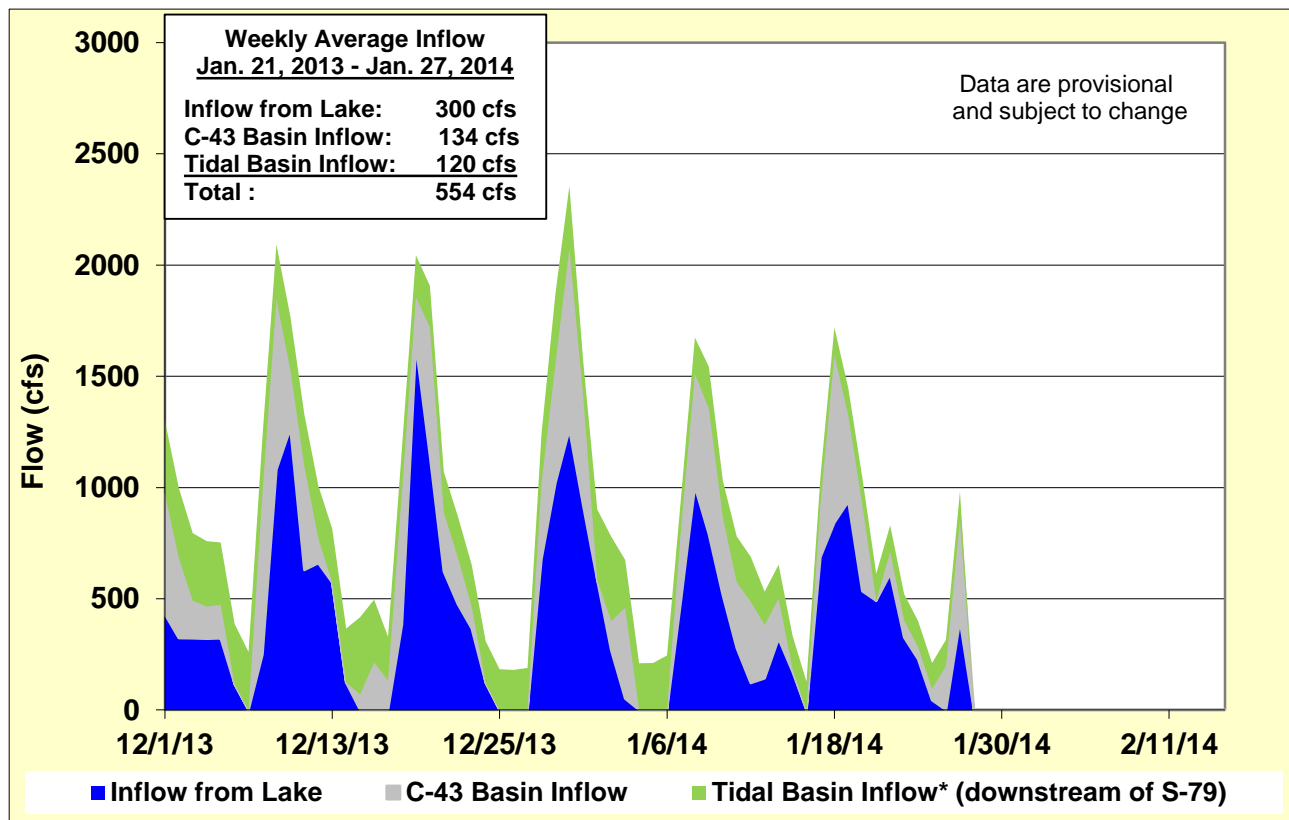


Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.

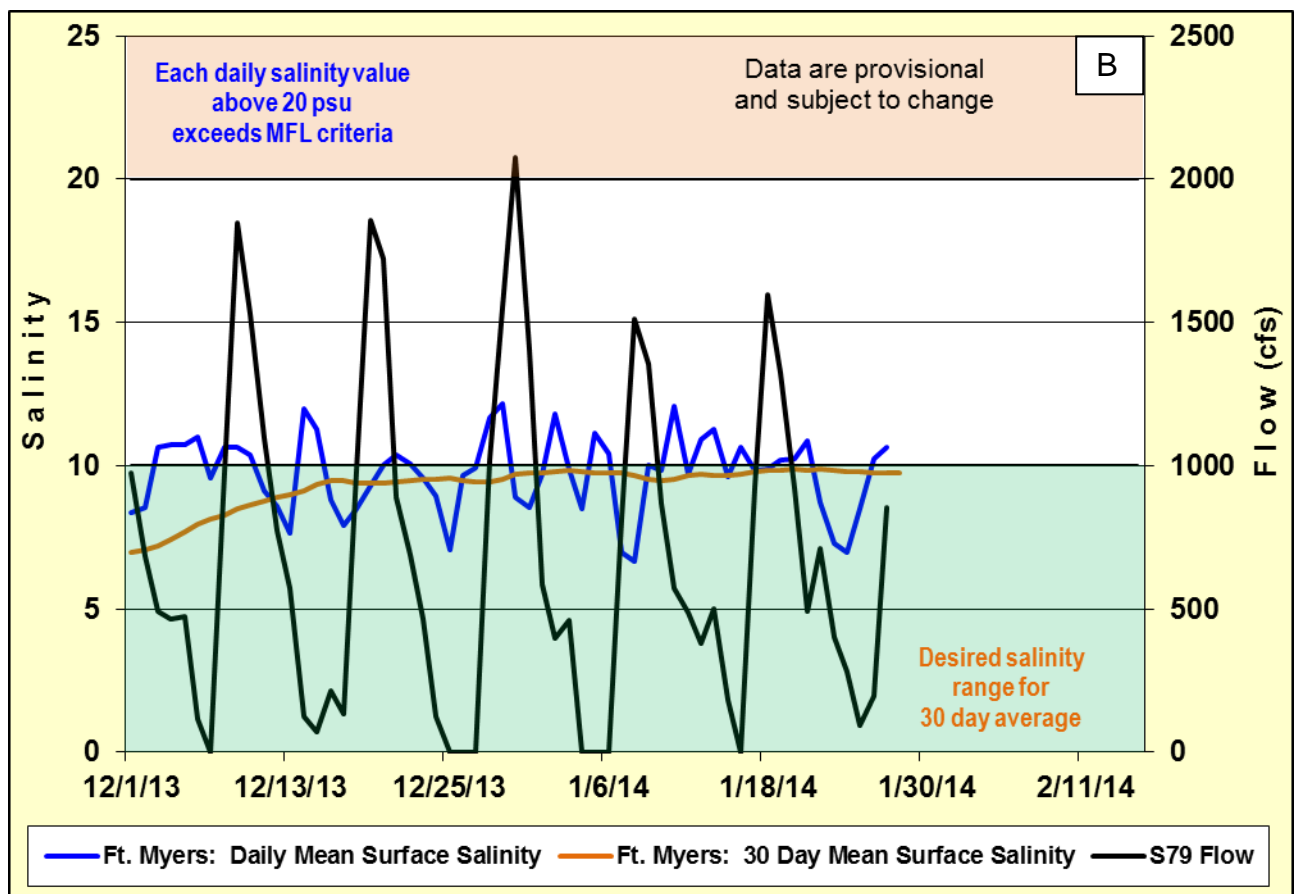
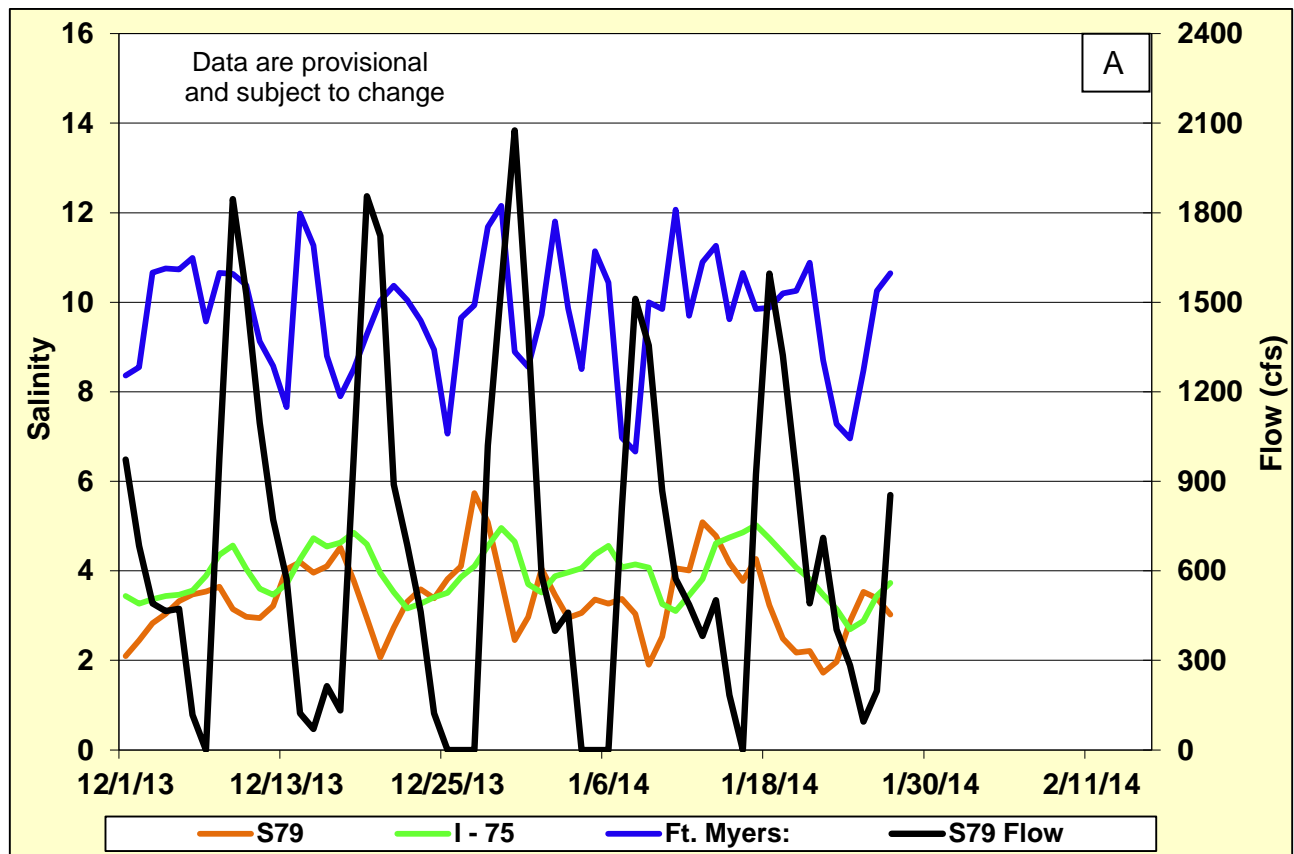


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

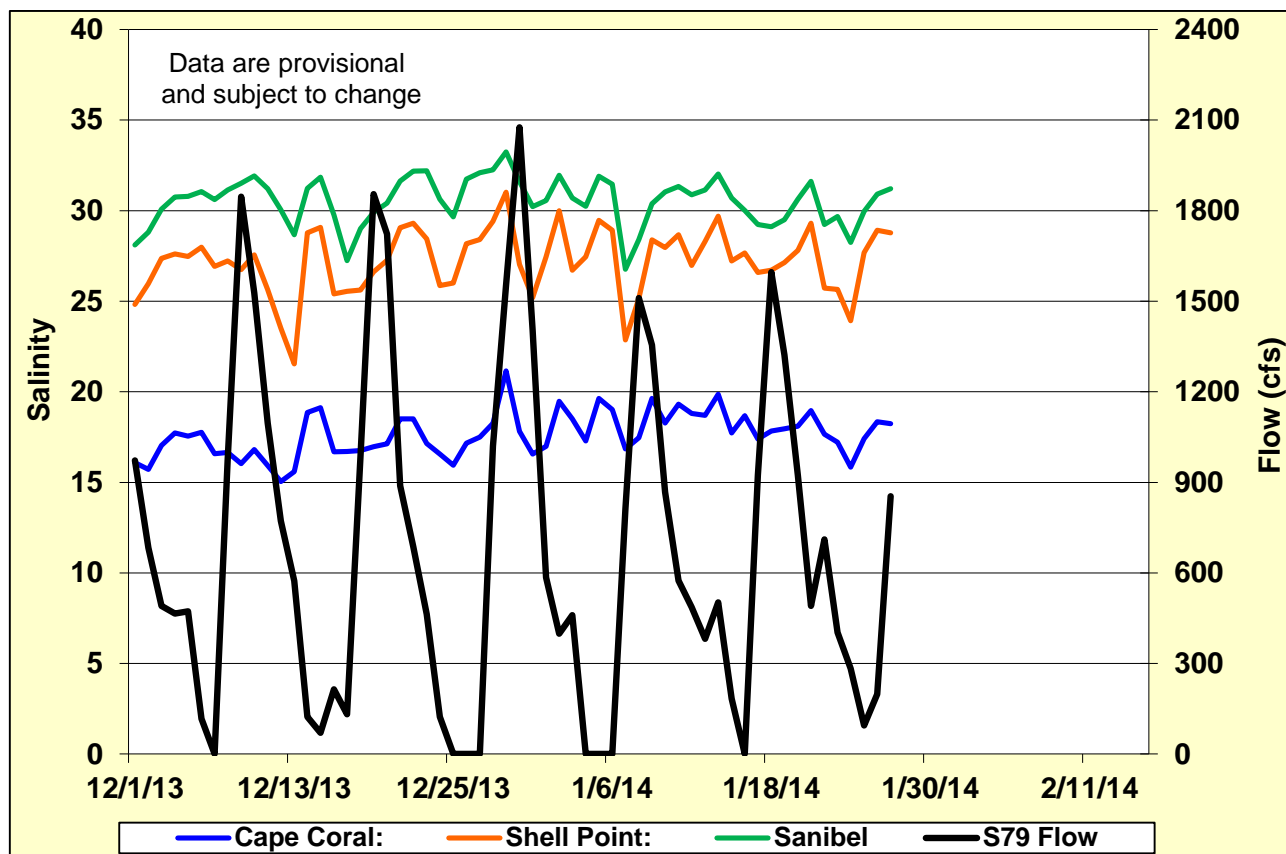


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

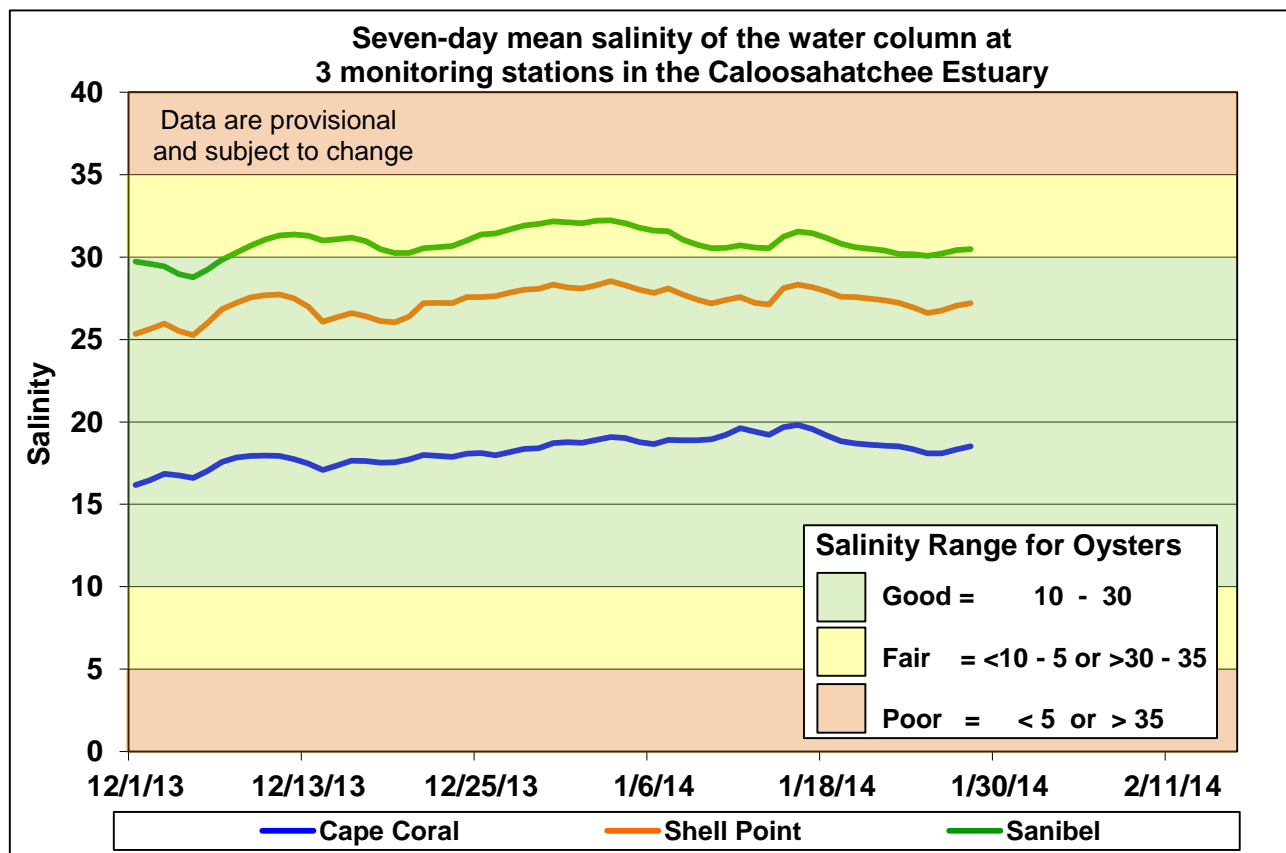


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

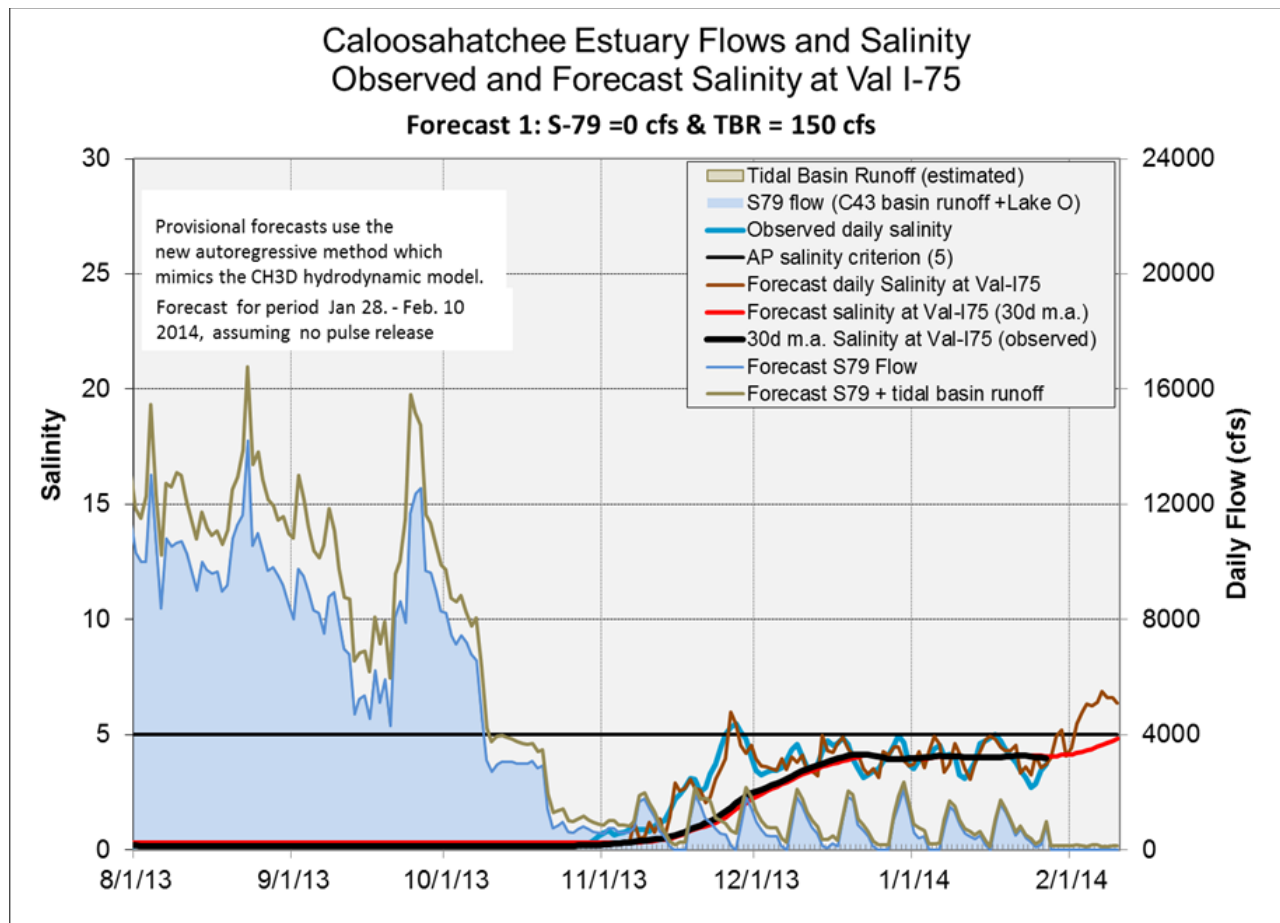


Figure 10. Provisional Val I-75 salinity forecast for January 28 – February 10, 2014.
Created on January 28, 2014.

GREATER EVERGLADES

Rainfall was sparse in the conservation areas and Florida Bay last week (see RAINДАР images and below), ranging from 0.00 inches to 0.20 inches. Everglades National Park (ENP) received the local maximum of 0.67 inches. Pan evaporation was 0.84 inches, very close to the weekly 0.83 inch average.

Average Rain:	WCA-1:	0.00 inches	WCA-3A:	0.03 inches
	WCA-2A:	0.01 inches	WCA-3B:	0.05 inches
	WCA-2B:	0.02 inches	ENP:	0.20 inches

Water Conservation Areas

As expected with sparse rainfall, water levels fell across the region last week (see below and the WCA stages table). Basin changes ranged from -0.02 feet to -0.10 feet, with individual gauges changing -0.02 feet to -0.11 feet.

Stage Change:	WCA-1:	-0.06 feet	WCA-3A:	-0.06 feet
	WCA-2A:	-0.10 feet	WCA-3B:	-0.09 feet
	WCA-2B:	-0.02 feet	NESRS:	-0.09 feet

Regulation Schedules

Water levels at the regulation schedule gauges have decreased over the last week (see WCA Regulation Stages). Except for WCA-2A, the WCAs remain below regulation. Both the three-gauge stage and the regulation schedule in WCA-1 are decreasing, so the current stage is 0.61 feet below

schedule. The wetland stage in WCA-2A is 0.86 feet above schedule. The three-gauge WCA-3A stage is 0.03 feet below the bottom of Zone E1 and 0.53 feet below regulation. Gauge 62 (Deer Gauge) is 0.92 feet below its upper schedule.

Water Depths and Changes

Current water levels are generally lower than a month ago, and most areas are 0.5 feet to 1.0 feet lower than they were one and two months ago. Water levels in northern WCAs 3A and 2A are below ground; Holey Land Wildlife Management Area is mostly dry, as well. The WDAT mapping program is not functioning correctly for WCA-2B, so this area has been grayed out.

The Depth Differences maps indicate that depths are lower this week than last week everywhere. This pattern is similar to that of a month ago, except that northern WCA-2A is slightly higher now than then. Relative to a year ago, stages are mixed, with northern WCAs 2A, northwestern 3A, all of WCA-3B, and most of Everglades National Park (ENP) slightly deeper than a year ago.

Everglades National Park (ENP) and Florida Bay

Rainfall was sparse over ENP and Florida Bay last week.

- All 14 rain gauges in ENP monitored for this report recorded rain ranging from 0.05 to 0.56 inches with the highest amounts recorded in southern Taylor Slough.
- Results from the seven-day spatially averaged RAINДАР totals for the past week: 0.20 inches for ENP and 0.23 inches for the C-111 basin. Maximum RAINДАР estimated rainfall for the past week: 0.67 inches for ENP and 0.36 inches for the C-111 basin.

ENP Wetland Stages

Water levels are slowly receding, as is typical for this time of year (see ENP Water Levels plot). Taylor Slough is one to four inches above historic averages for this time of year. The northern parts of the system, closest to water management inflows, normally show the largest changes week to week. Northern Shark River Slough is 1.4 inches below its historic average.

Station	Jan. 26 water level (feet)	Weekly change (feet)	30 day change (feet)
Shark River Slough (P33)	0.87	-0.11	-0.47
ENP Panhandle (EVER6)	0.39	-0.06	-0.18
Northern Taylor Slough (TSB)	0.39	-0.23	-0.90
Southern Taylor Slough (CP)	1.46	-0.02	-0.14

Salinity

Salinities are generally stable across Florida Bay. Most areas are within four psu of their averages for this time of year. In general, the central bay areas are slightly below average and the eastern bay areas, including the Taylor Slough nearshore embayments, are slightly above average. Long Sound has been slightly above average since the culverts under US1 were installed. The 30-day moving average of salinity at the Taylor River Minimum Flows and Levels (MFL) site remains well below the 30 psu criterion at 0.4 psu. Trends in salinities at three indicator stations are shown in the figures ENP Little Madeira/Whipray Basin Salinity and Minimum Flows and Levels/Taylor River Salinity.

Area of Florida Bay	Jan. 26 Salinity (psu)	Weekly Change (psu)
C-111 basin near-shore embayments (Long Sound)	23.9	+0.6
Taylor Slough near-shore embayments (Little Madeira Bay)	22.4	-1.0
Taylor Slough transition zones ponds (Taylor River)	0.4	0.0
Northeastern Bay (Duck Key)	28.3	+1.1
Central near-shore embayments (McCormick Creek and Terrapin Bay)	14.8	-0.7
Central Bay (Whipray Basin)	29.0	+0.1
Shark River Slough transition zones ponds (Tarpon Bay East)	1.6	+0.2

Wildlife

Over 8000 wading birds were observed in northern WCA-1 last week. Very few were observed in WCAs 2 and 3.

Water Management Recommendations

Water levels in northeastern WCA-3A and in the vicinity of the Alley North colony are lower than desired for wading bird breeding, so releases from the S-11 structures that reach the wetlands would be beneficial.

The January 2014 Multi-Species Seasonal Meeting (MSM) and Periodic Scientist Call developed a short-term ecological strategy for water management through the next Periodic Scientist Call (scheduled for February 6, 2014). Biologists and managers anticipate low water levels this year and are exploring potential targets that are both a) realistic and b) serve an ecological purpose. Our ecological recommendation is to retain water in WCA 3A where possible and utilize slow recession rates (≤ 0.06 feet/week) to help conserve water for later in the season. Additionally, we recommend retaining water within WCA 2A and slow recession rates to provide nesting wading birds with suitable foraging areas throughout the nesting season. When extra water is available and no negative ecological impacts would be expected, it is desirable that treated water be released into WCA-2A and/or WCA-3A at levels that would moderate recession rates. Because large reversals have a negative impact on wildlife, we recommend that reversals be avoided whenever possible. In the event a reversal cannot be avoided, area biologists should be consulted prior to significant water releases made in anticipation of the increasing water levels for advice to minimize negative impacts.

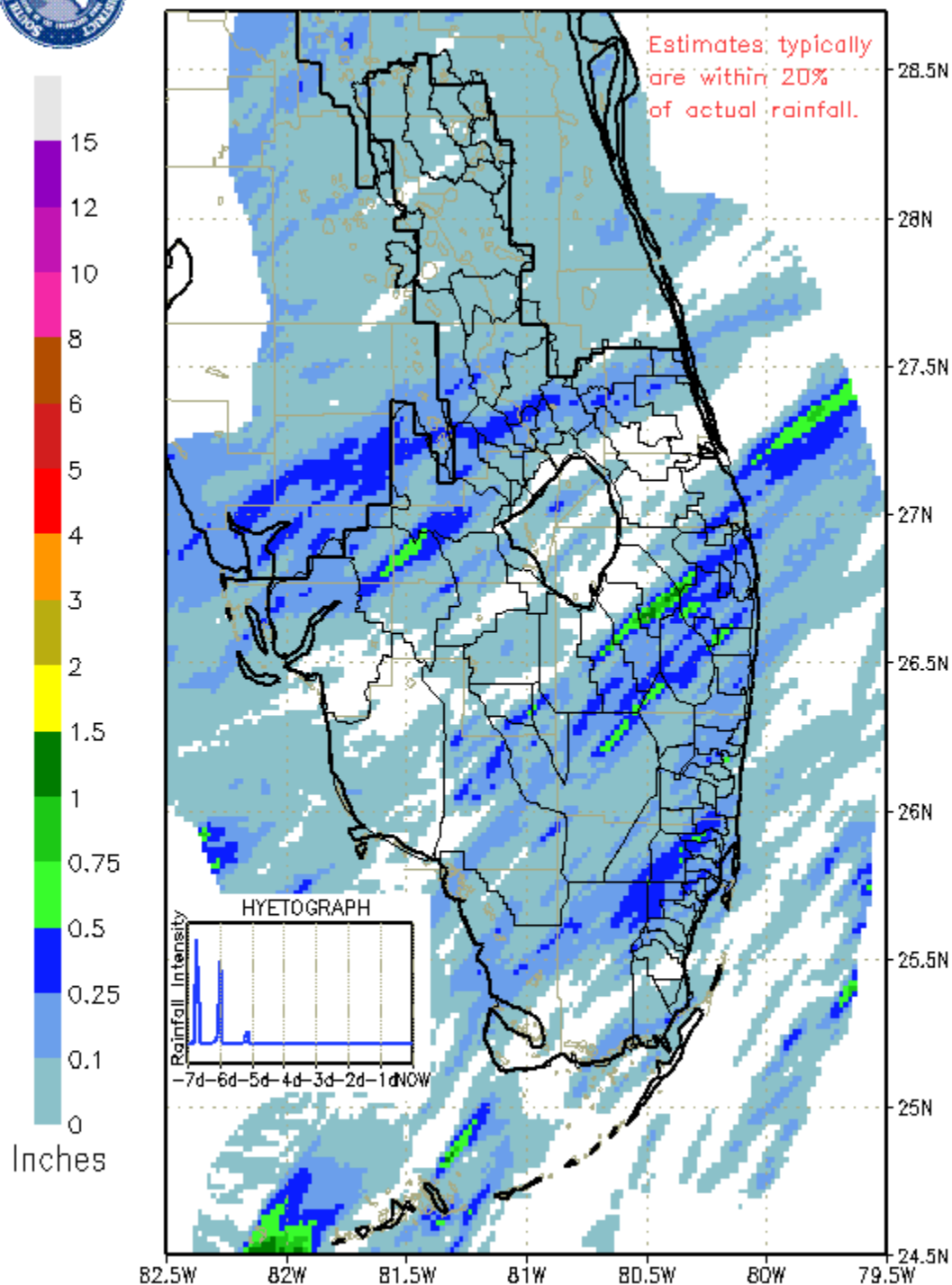
Because the forecast for this dry season is for normal precipitation, high evapotranspiration will continue to cause water levels to decline when rainfall is light. We continue to recommend conserving water now rather than later in the dry season, when lack of appropriate hydrological conditions can cause significant mortality of chicks, elevated wildfire risks, and peat loss.

RAINDAR (one week):



SFWMD RAINDAR 7-DAY RAINFALL ESTIMATES

FROM: 0615 EST, 01/14/2014 THROUGH: 0615 EST, 01/21/2014

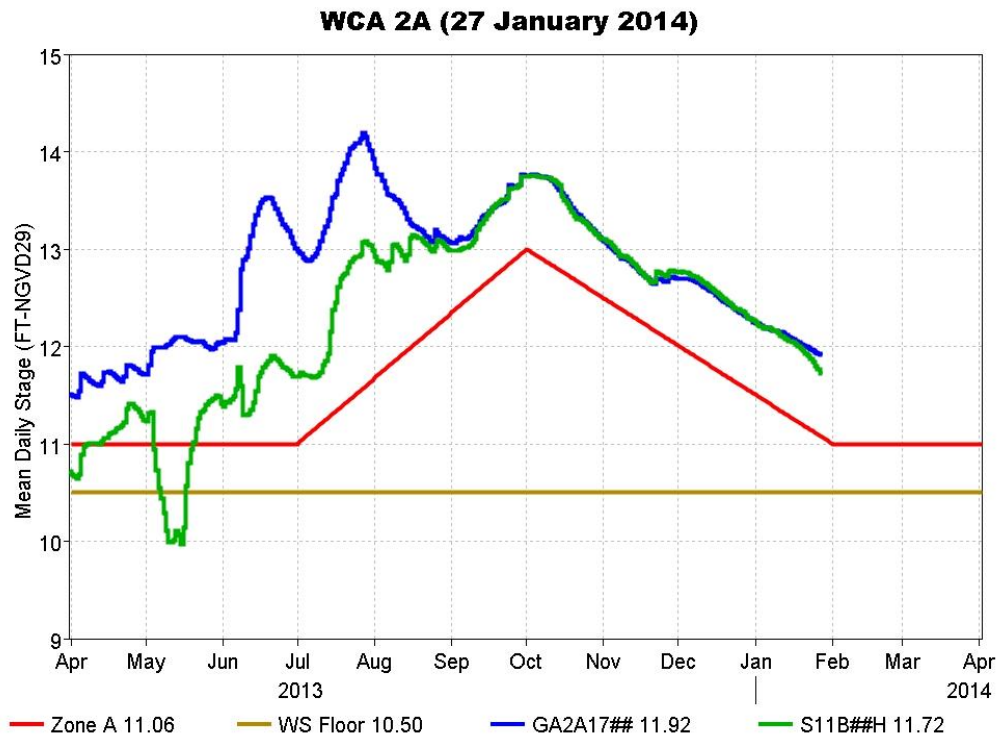
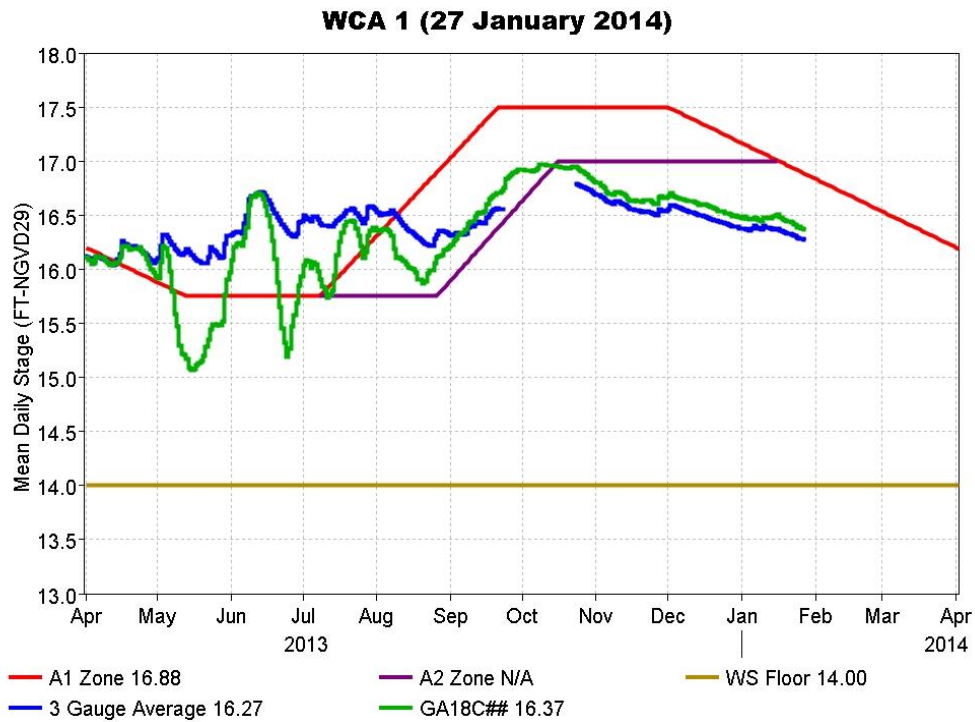


DISTRICT-WIDE RAINFALL ESTIMATE: 0.094"

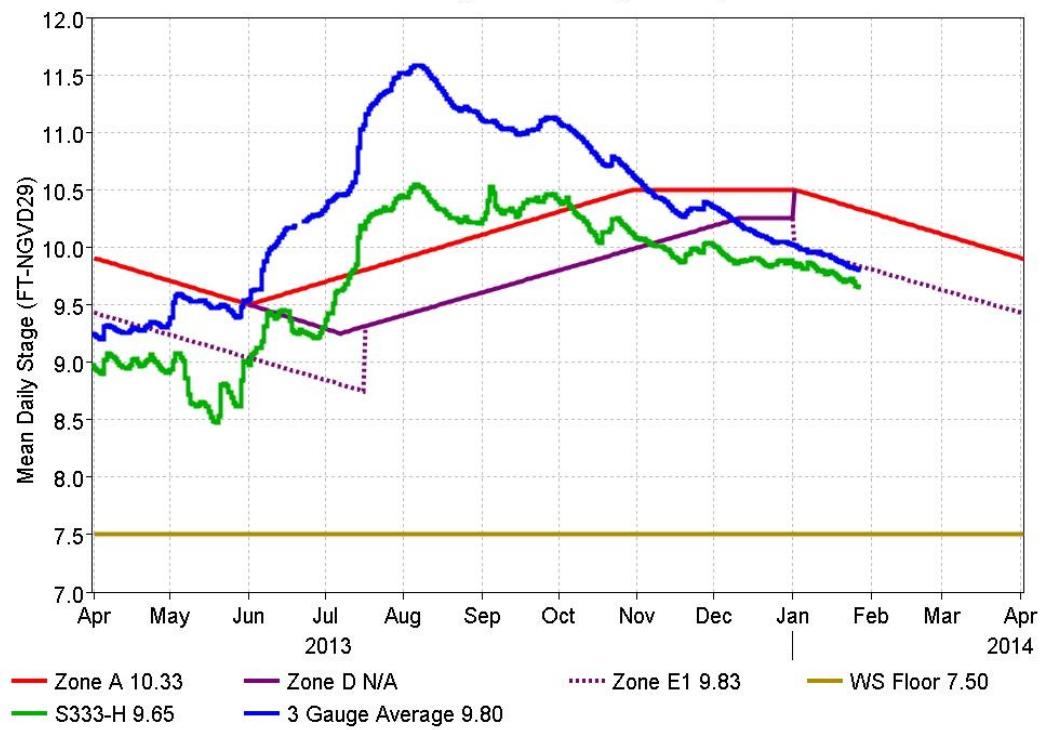
WCA Stages (Eqp=equipment error, na=not available):

WCA and ENP Hydrology Data										
Area	Gage	Ground Elevation	Stage 12/3/13	Stage 12/10/13	Stage 12/17/13	Stage 1/7/14	Stage 1/14/14	Stage 1/21/14	Stage 1/28/14	1 week stage change
WCA-1	1-7	15.4	16.63	16.57	16.51	16.39	16.38	16.35	16.30	-0.05
	1-9	14.7	16.57	16.52	16.47	16.41	16.36	16.31	16.26	-0.05
	1-8T		16.57	16.51	16.48	16.37	16.37	16.32	16.24	-0.08
WCA-2A	2-17	11.1	12.70	12.64	12.51	12.18	12.10	12.00	11.90	-0.10
WCA-2B	99	6.8	10.96	10.84	10.79	10.63	10.60	10.60	10.58	-0.02
	EDEN-13	6.7	9.39	9.27	9.22	9.04	9.04	9.04	9.02	-0.02
WCA-3A	62	10.1	11.10	11.00	10.90	10.73	10.69	10.64	10.59	-0.05
	63	9.08	10.44	10.32	10.20	9.96	9.91	9.83	9.77	-0.06
	64	8.49	10.51	10.41	10.28	10.17	10.16	10.09	10.02	-0.07
	65	7.3	10.02	9.91	9.89	9.80	9.80	9.72	9.65	-0.07
WCA-3B	76	6.32	8.11	8.01	7.95	7.87	7.86	na	7.71	na
	71	6.52	8.17	8.13	8.06	8.03	7.98	7.88	7.81	-0.07
	SRS1	6.23	8.03	7.99	7.92	7.93	7.86	7.74	7.63	-0.11
ENP	NESRS2	5.62	7.23	7.15	7.07	7.00	6.93	6.86	6.77	-0.09
			1 wk stage change 12/3/13	1 wk stage change 12/10/13	1 wk stage change 12/17/13	1 wk stage change 1/7/14	1 wk stage change 1/14/14	1 wk stage change 1/21/14	1 wk stage change 1/28/14	
WCA-1	1-7		0.11	-0.06	-0.06	-0.12	-0.01	-0.03	-0.05	
	1-9		0.07	-0.05	-0.05	-0.06	-0.05	-0.05	-0.05	
	1-8T		0.08	-0.06	-0.03	-0.11	0.00	-0.05	-0.08	
WCA-2A	2-17		0.04	-0.06	-0.13	-0.33	-0.08	-0.10	-0.10	
WCA-2B	99		-0.05	-0.12	-0.05	-0.16	-0.03	0.00	-0.02	
	EDEN-13		-0.06	-0.12	-0.05	-0.18	0.00	0.00	-0.02	
WCA-3A	62		0.01	-0.10	-0.10	-0.17	-0.04	-0.05	-0.05	
	63		0.01	-0.12	-0.12	-0.24	-0.05	-0.08	-0.06	
	64		-0.02	-0.10	-0.13	-0.11	-0.01	-0.07	-0.07	
	65		0.00	-0.11	-0.02	-0.09	0.00	-0.08	-0.07	
WCA-3B	76		0.05	-0.10	-0.06	-0.08	-0.01	na	na	
	71		0.04	-0.04	-0.07	-0.03	-0.05	-0.10	-0.07	
	SRS1		0.01	-0.04	-0.07	0.01	-0.07	-0.12	-0.11	
ENP	NESRS2		0.02	-0.08	-0.08	-0.07	-0.07	-0.07	-0.09	
			Depth 12/3/13	Depth 12/10/13	Depth 12/17/13	Depth 1/7/14	Depth 1/14/14	Depth 1/21/14	Depth 1/28/14	
WCA-1	1-7		1.23	1.17	1.11	0.99	0.98	0.95	0.90	
	1-9		1.87	1.82	1.77	1.71	1.66	1.61	1.56	
	1-8T									
WCA-2A	2-17		1.60	1.54	1.41	1.08	1.00	0.90	0.80	
WCA-2B	99		4.16	4.04	3.99	3.83	3.80	3.80	3.78	
	EDEN-13		2.69	2.57	2.52	2.34	2.34	2.34	2.32	
WCA-3A	62		1.00	0.90	0.80	0.63	0.59	0.54	0.49	
	63		1.36	1.24	1.12	0.88	0.83	0.75	0.69	
	64		2.02	1.92	1.79	1.68	1.67	1.60	1.53	
	65		2.72	2.61	2.59	2.50	2.50	2.42	2.35	
WCA-3B	76		1.79	1.69	1.63	1.55	1.54	na	na	
	71		1.65	1.61	1.54	1.51	1.46	1.36	1.29	
	SRS1		1.80	1.76	1.69	1.70	1.63	1.51	1.40	
ENP	NESRS2		1.61	1.53	1.45	1.38	1.31	1.24	1.15	

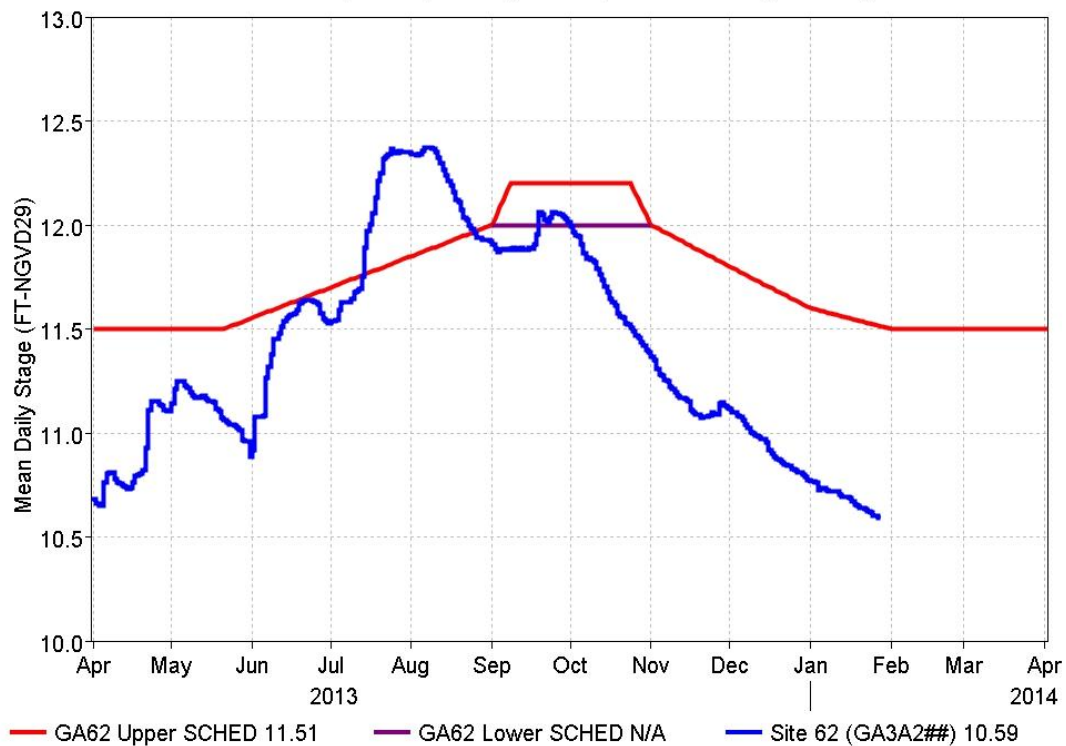
Water regulation schedules:



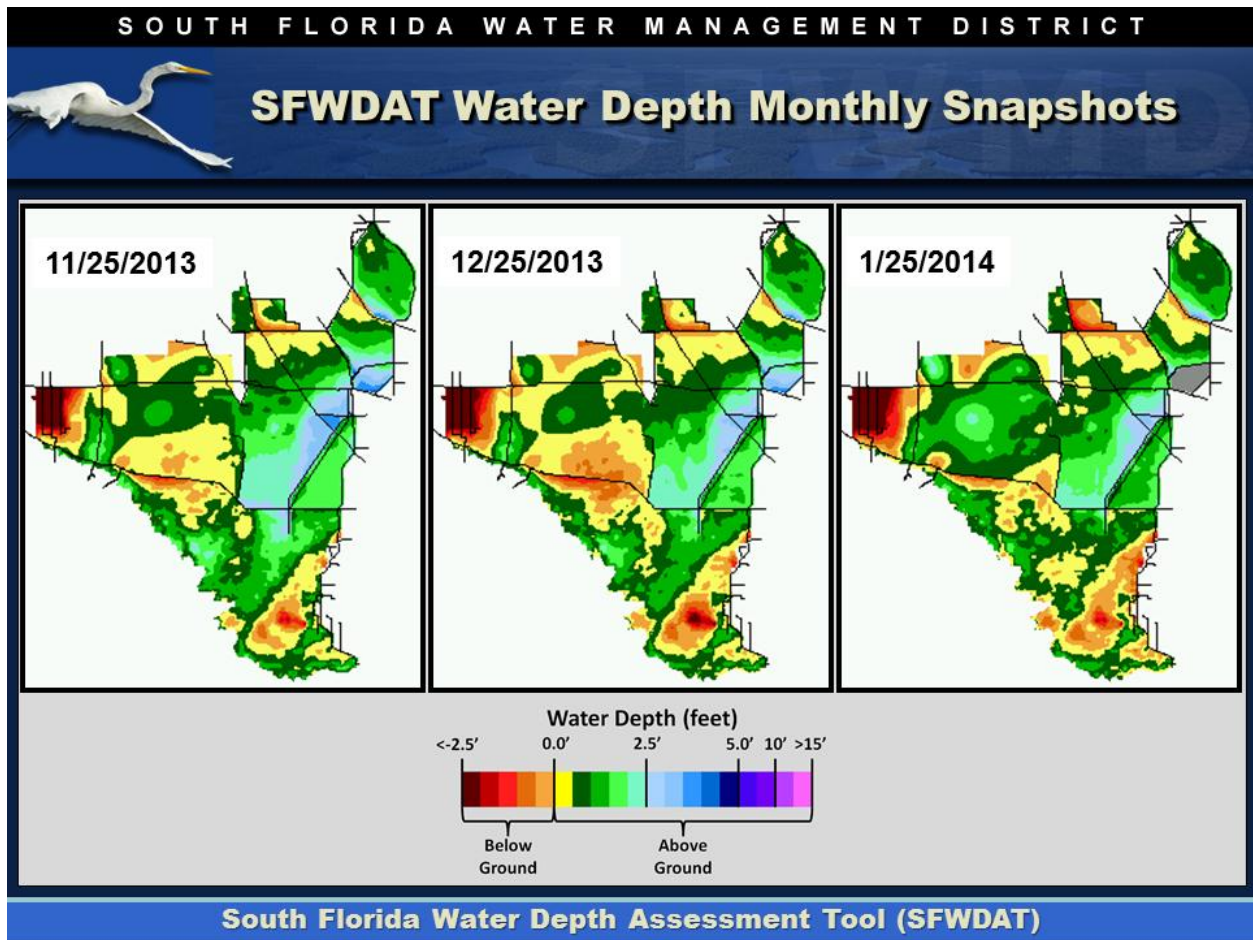
WCA 3A (27 January 2014)



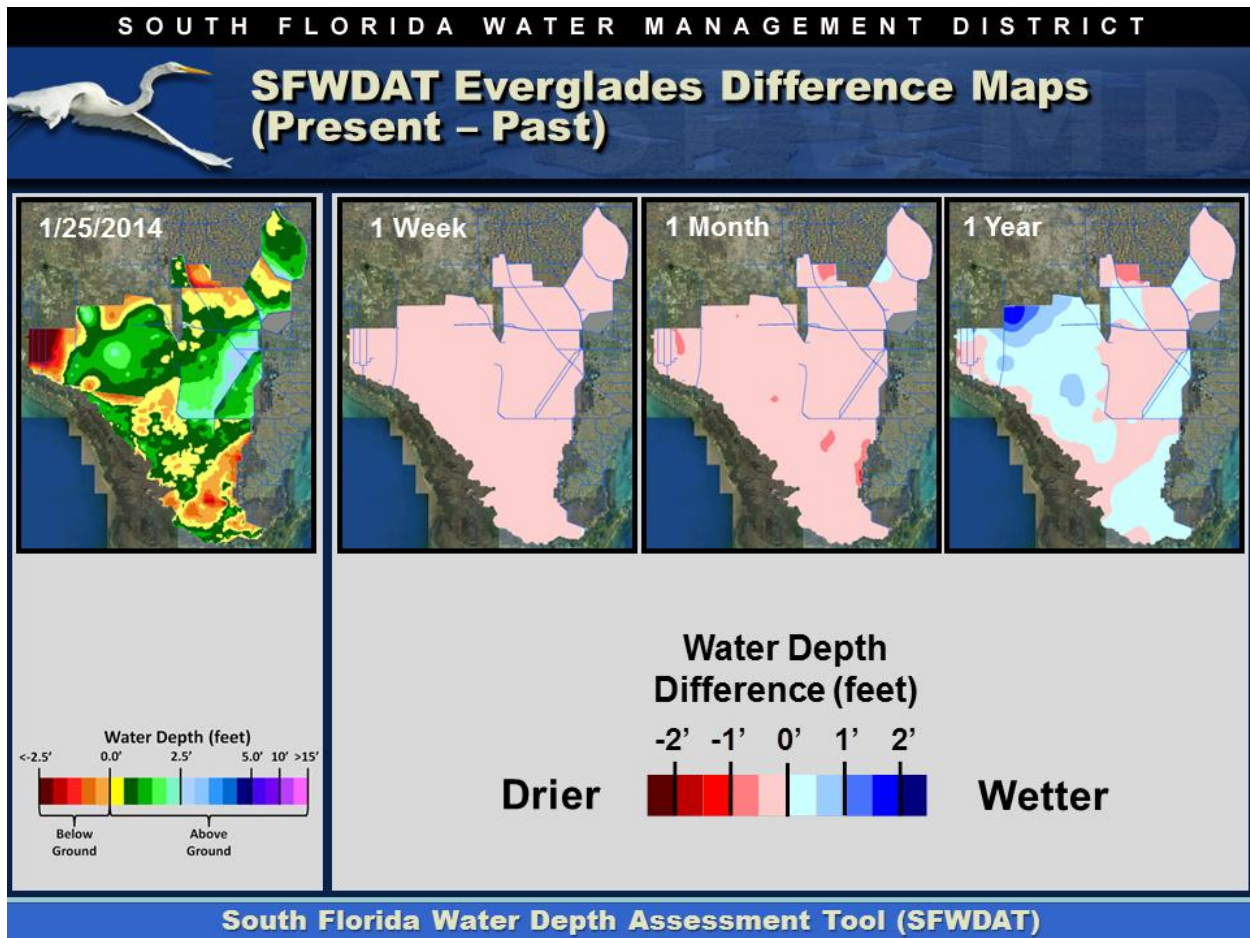
WCA-3A (Deer) Gauge 62 (27 January 2014)



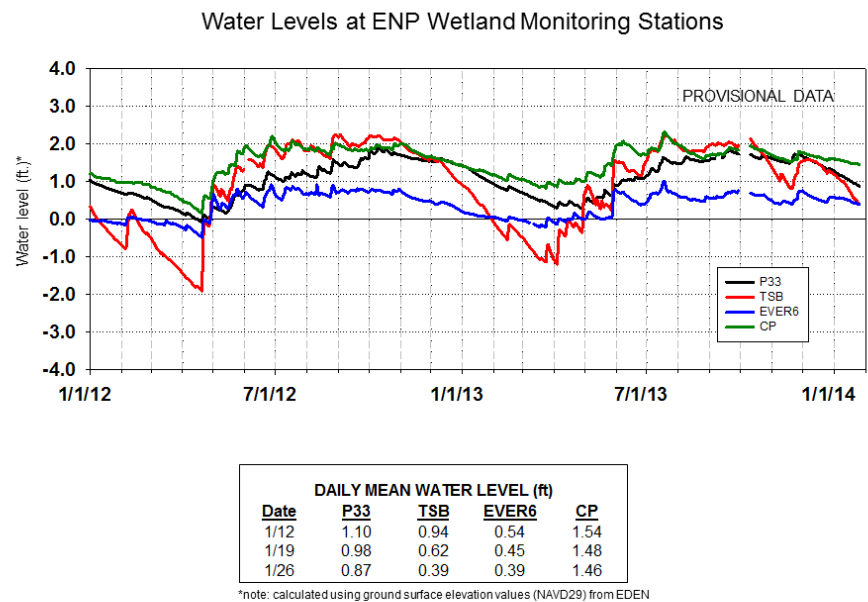
Water Depths:



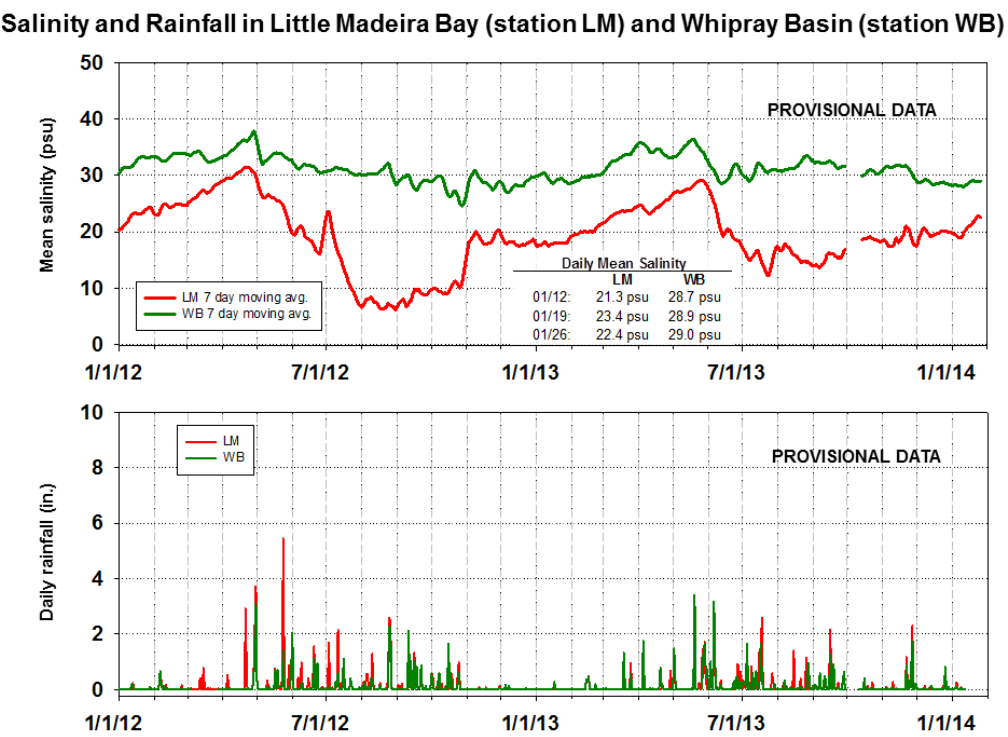
Water Depth Changes:



ENP Water Levels:



ENP Little Madeira/Whipray Basin Salinity:



Minimum Flows and Levels/Taylor River Salinity:

Salinity, Florida Bay MFL Tracking, and Rainfall in Taylor River Ponds (station TR)

